Farming for the Future Progress Report 1990

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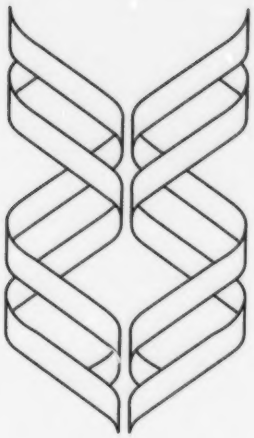

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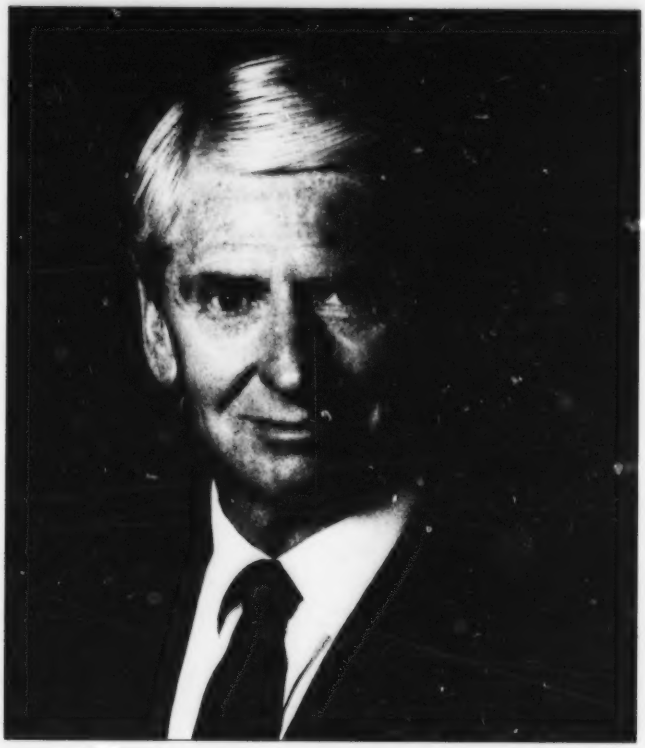
Chairman's Report



As Chairman of Alberta's Farming for the Future Council, I am pleased to present the 11th annual Progress Report of the Farming for the Future agricultural research program. This report covers the operating year April 1, 1989 to March 31, 1990, the third year of the program's third mandate.

Farming for the Future's objectives of improving net farm income and promoting the long-term viability of Alberta's agricultural sector were set when the program was first established in the late 1970s. Since then, these guidelines have served us well being the basis for our decisions to support hundreds of soil research and demonstration projects. As a result, the program is yielding substantial short-term and long-term benefits for agriculture in Alberta.

Research and technology transfer have been fundamental to progress in prairie agriculture from the beginning. When the pioneers first broke the land, they faced enormous odds. Short growing seasons, fragile and erodible soils, diseases, weeds, insects and often insufficient rainfall seemed like insurmountable problems. But, using their own skills and with the help of Canadian researchers, they beat the odds.

Starting in the late 1800s, farmers and scientists continually worked to develop varieties better and better adapted to the needs of Alberta's producers. And researchers helped in other battles to advance agriculture. They discovered ways to control specific weeds and refined those methods to meet economic and environmental concerns. They developed procedures to control livestock disease and worked to make the procedures more effective. They promoted better practices for the management and conservation of our soil and water resources. They investigated new techniques to process food and improved packaging methods to offer consumers top-quality products. In recent years, agricultural researchers have taken full advantage of the enormous opportunities possible through advanced computer technology and biotechnology to find even better solutions to long-standing problems. By building on past achievements and taking innovative approaches, researchers have helped Alberta's agricultural producers and processors meet and beat the challenges they face.

Farming for the Future has been a vital part of the history of agricultural research in our province through our two grant programs: the Research Program and the On-Farm Demonstration Program. The Research Program funds research aimed at the needs of Alberta's agri-food industry. The On-Farm Demonstration Program provides grants for tests and demonstrations of research results so that Alberta's farmers can more easily implement these scientific advances.

Since 1979, Farming for the Future has awarded $47.452 million to 549 research projects and $3.328 million to 683 demonstration projects. There are projects concerning all the major commodities

and resources of importance to Alberta's agri-food industry. Some of the numerous positive results from Farming for the Future projects include:

- improved wheat, canola and barley varieties for Alberta conditions
- new cattle reproduction technology
- an alternative method of controlling grasshopper outbreaks
- a new approach for estimating risks and returns from various crops
- better strains of nitrogen-fixing bacteria for cool Alberta conditions
- rapid techniques for evaluating livestock feed
- vaccines to control livestock and poultry diseases
- better ways to reduce seepage from irrigation systems
- a canola-based substitute for soy sauce
- an inexpensive modification to current potato storage techniques which can improve the yield and grade of seed potatoes.

And there have been many more. The program's results are energizing the province's agricultural sector so it will be better able to meet the challenges of the years ahead.

Last year, Farming for the Future again received an allocation of $5 million from the Alberta Heritage Savings Trust Fund. The Farming for the Future Council has the responsibility of assessing and funding proposals submitted to the program. In 1989-90, the Research Program received 262 applications requesting more than $11 million in total support. Council selected the top 101 applications and awarded a total of $3.939 million to these projects. Also, 144 demonstration projects were supported with total funds of over $580,000.

In 1989, Council made a profound decision on its future course. Since the creation of the Alberta Agricultural Research Institute in 1987, Council has co-operated with this Crown corporation to strengthen agricultural research activities in Alberta. In July, Council passed a motion to merge Farming for the Future with the Institute. Through amalgamation Council hopes to better coordinate the direction, planning and financial support of agriculture and food research. It is our objective and expectation that this merger will result in a better focus on issues of utmost importance to agricultural production and processing.

Council is composed of active members of the agri-food industry and representatives of governmental and academic agencies. In the past year, Council had a number of changes in its membership. In May 1989, Dr. Don Waldern, Director of Agriculture Canada's Lacombe Research Station, retired. He served on Council since 1982 and his well-informed and thoughtful counsel will be greatly missed. Replacing Dr. Waldern as Agriculture Canada's representative on Council is Dr. Bernie Sonntag, Director of the Lethbridge Research Station. I know Council will benefit greatly from his expertise.

Two producer members, Mr. Gail Fjordbotten of Granum and Mr. Nestor Romaniuk of Willingdon, retired from Council. Their knowledgeable input was always constructive. Mrs. Jacalyn Anderson of Rimbey resigned in July 1989, due to other business commitments. I thank her for her participation. Council welcomed two new producer members: Mr. John Prentice of Calmar and Mr. Ben Schrader of Jarvie. Their sound advice will be an asset to Council. Mr. Jack Ady, Member of the Legislative Assembly for Cardston, was replaced by Mr. Ty Lund, MLA for Rocky Mountain House. Mr. Ady served Council well with his diligence. I know Mr. Lund is committed to agriculture and agricultural research and I am pleased to be working with him.

The informed decision-making of Council has helped to create Farming for the Future's outstanding record of performance. As well, producers, scientists, technicians, extension specialists, committee members and administrative staff have all contributed to Farming for the Future's success. I thank them for their valuable participation.

As we move towards the program's merger with the Institute, the results from Farming for the Future's projects will continue to yield impressive and practical benefits for the industry. Albertans can be proud of the achievements in this past year and in each year since the program started. Farming for the Future has proven to be one of our government's most important initiatives in our long Alberta tradition of agricultural development and progress through research.

H.B. (Ben) McEwen
Deputy Minister of Agriculture
Chairman, Farming for the Future Council
October 1990

1990 Progress Report

Introduction

For over a decade, Farming for the Future has been funding agricultural research. It is part of the much longer prairie tradition of promoting progress through agricultural research. Since the turn of the century, Canadian scientists have been working to help farmers and food processors meet the ever-changing challenges of this complex industry. In 1989-90, Farming for the Future continued to be a major player in this noble tradition.

The objective of this Alberta Heritage Savings Trust Fund program is to support research and technology transfer aimed at improving net farm incomes and promoting the long-term viability of Alberta's agri-food industry. Although the industry has seen many changes since the late 1970s, when Farming for the Future started, the program's goals remain as vital as ever. Its research and demonstration projects continue to help make agricultural production and processing more efficient, environmentally sustainable and profitable. Overall, Farming for the Future's projects have been very successful and the industry is reaping substantial benefits from their results.

Farming for the Future has two funding mechanisms. The Research Program, which began in 1979, is Farming for the Future's main grant program. It provides financial support for agri-food research of benefit to Alberta. In 1989-90, grants awarded under this program totalled nearly $4 million. The other funding vehicle is the On-Farm Demonstration Program which began in 1982. Projects under this program are used to transfer innovative techniques to Alberta farmers and show how these techniques work under local conditions. Last year, awards under the program totalled nearly $600,000.

Currently Farming for the Future receives an annual allocation of $5 million, subject to approval by the Alberta Legislature. In 1989-90, the program was in its 11th year of funding. The Alberta Legislature's continued support of Farming for the Future is a tribute to the many important and practical results its projects have generated for the province's agri-food industry.

Administration

The Farming for the Future Council is the program's governing body. The Council is composed of active producers and representatives of governmental and academic agencies, and is chaired by Alberta's Deputy Minister of Agriculture.

The Council reviews and approves all expenditures made under Farming for the Future and establishes policies and procedures for program activities. In 1989-90, Council awarded a total of $3.939 million to 101 research projects, and 144 demonstration projects were supported with total funds of $580,831.

In July 1989, the Farming for the Future Council passed a motion to merge with the Alberta Agricultural Research Institute. The Institute is a Crown corporation designed to co-ordinate, promote and support agricultural research in Alberta. Although the Council worked closely with the Institute since its inception in 1987, the Council determined that amalgamation of their efforts would significantly improve research planning and priorization and ensure that optimal use will be made of the limited funds available for agri-food research.

The Research Division of Alberta Agriculture is responsible for Farming for the Future's daily operations, administering projects and creating awareness about project results and about the program as a whole. As part of its information dissemination role, the Research Division produced the *1989 Farming for the Future Progress Report* and several issues of the popular newsletter, *Research Report*, which describes program activities and specific projects, and annually lists awards made under the Research and On-Farm Demonstration programs. The Division also organized the Fourth Farming for the Future Conference, held in March 1990 in Lethbridge. The theme of the conference was "Improving Agricultural Productivity and Efficiency in the 1990s." Researchers made presentations to farmers, other scientists and the general public on the results of Farming for the Future crop, livestock, soil conservation and irrigation research.

In addition, the Research Division broke new ground in the transfer of research results to farmers, processors and extension staff. It developed a computerized database and a computer-based bulletin board system, called the Ag-Research BBS, which is fully dedicated to the task of technology transfer. This system makes results from Farming for the Future projects available to anyone, anywhere, who has access to a computer, a telephone and a modem.

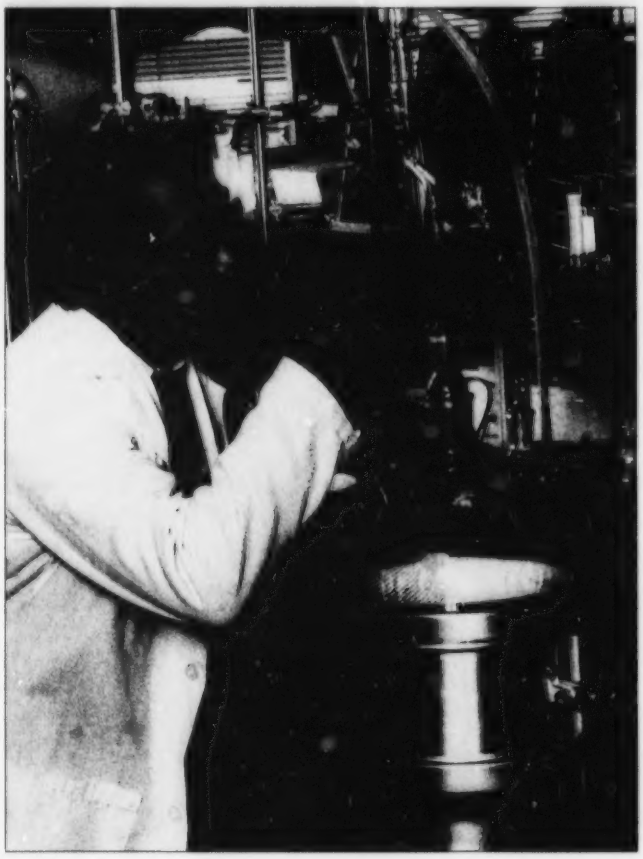
Research Program

Introduction

The Research Program is Farming for the Future's main funding vehicle. Scientists from across Canada submit proposals to the program for research relevant to Alberta's agri-food industry. The proposals are evaluated once a year, first by one or more of Farming for the Future's program committees. The Farming for the Future Council then considers each proposal along with the committees' comments. The Council forwards its recommendations to the Alberta Minister of Agriculture who makes the final decision on project funding.

The program committees are composed of researchers, farmers and other members of the agri-food industry, and are chaired by producer members of the Council. Each committee provides the Council with technical assistance in evaluating proposals in a specific subject area and its members are selected for their expertise in that area. The nine program committees are: Cereals and Oilseeds; Crop Protection and Entomology; Forages; Irrigation; Land Resources and Engineering; Non-Ruminants; Processing and Marketing; Ruminants; and Special Crops.

Every proposal submitted to the Research Program is thoroughly evaluated according to a number of criteria including the suitability of the research design, the cost and length of the project, and the potential benefit to Alberta's agricultural industry. Last year, Farming for the Future awarded a total of $3.939 million to 36 new and 65 ongoing research projects. Examples of these projects are described below, and a complete list of research projects funded in 1989-90 appears later in this report.



The painstaking efforts of Alberta scientists have often led to new information and technology of benefit to farmers.

Crop Research

Cereals and Oilseeds

Cereal and oilseed production has been a cornerstone of Alberta's agricultural industry since the start of agriculture in the province. In 1989, these crops generated $1.59 billion in farm cash receipts. Wheat was the province's most valuable crop, with receipts of $696 million. Canola was second at $416 million, and barley third at $375 million.

From the start, research has played a major role in improving cereal and oilseed production on the prairies. Farming for the Future's Research Program continued this sound tradition in 1989-90 by supporting nine cereal and oilseed projects with funds totalling $675,000. Some of these studies focused on creating better crop varieties, including a project on breeding canola for specific Alberta regions and one to develop disease-resistant soft white wheats. Improved crop strains are important for achieving higher yields, but Farming for the Future's research goes one step further. It also funds projects to help the improved varieties achieve their greatest potential.

Although higher-yielding oat cultivars have been developed in recent years, yield improvements have eluded many farmers because of wild oat infestations. Wild oats are a common weed but they can be controlled in most crops with available herbicides. Cultivated oats, however, are sensitive to these herbicides. Therefore, the Research Program funded a project to locate genetic sources of tolerance to wild oat herbicides and then to transfer these genes to Alberta oat cultivars.

Another project evaluated methods to achieve maximum yields of barley, wheat and canola through intensive crop management (ICM) systems. These systems were originally developed in Europe but they can be adapted to Alberta conditions with research to find appropriate crop varieties, fertilizer rates and pesticide applications. The results from this project could help ICM systems to fulfill their promise of higher yields and greater production efficiency.

Growth chambers are critical to many plant breeding experiments. By using the chambers to control such factors as humidity, temperature and length of daylight (using the control panel above), scientists can significantly reduce the length of time required to develop a new crop variety or to test the effects of different treatments on specific crops.

Forages

Alberta's forage production had an approximate on-farm cash equivalent value of $800 million in 1989, primarily from tame hay, cereal silage and greenfeed. Forages are important for livestock feed and can also play a valuable role in protecting and improving the soil. Recognizing the significance of these two aspects, the Research Program supported six projects concerning forages with a total allocation of $212,000. Topics under investigation included: management of orchard grass cultivars under intensive grazing, use of winter cereals for fall pasture, and improvement of native pastures.

About half of Alberta's forage supply for livestock is produced by native grasslands. In 1989-90, two projects studied rough fescue, a tall, palatable native grass. Although this grass is very productive, it is also sensitive to overgrazing. One of these projects investigated short-duration grazing as a technique to improve the productivity of overgrazed rough fescue rangelands in central Alberta. By improving the condition of native rangelands, livestock weight gains could also improve.

The other project evaluated winter grazing of native pastures in the foothills region of Alberta. Rough fescue is well-suited to winter grazing: it's tall and maintains its nutrients better than most introduced species. As well, cattle will selectively overgraze the regrowth on rough fescue in the summer, but if they graze in the winter when the plants are dormant, the problem is eliminated. If it proves feasible, winter grazing of rough fescue could reduce winter feed costs and increase the long-term productivity of these pastures.

Alternative Crops

Many Alberta farmers are growing alternative crops as a way of increasing their potential markets and lowering their economic risks. As a result, farm cash receipts from these crops increased over the past decade from $88 million in 1979 to $201 million in 1989. To help farmers diversify successfully, the Research Program awarded $349,000 to nine alternative or "special" crops projects last year. These projects investigated a wide range of crops including safflower, pulses, spices and ornamental trees.

Potatoes are an important and well-established alternative crop in Alberta, with on-farm cash receipts of $42.5 million in 1989. Three 1989-90 Research Program projects concerned potatoes. One study set out to develop tests for detecting bacterial infections so that seed tubers with these diseases could be found and eliminated. Another potato project also concerned disease eradication, but it took a different approach. Using tissue culture procedures, rapid propagation methods and virus testing techniques, it aimed to produce disease-free seed. A third project studied the effects of increased seed tuber age on yield and earliness. Because the physiological age of tubers can be changed merely by changing the storage temperature, this study could offer a simple way to increase yields without significantly increasing costs.

Special crops continue to increase their relative importance in Alberta's primary production. Research is being conducted on increasing the amount of spice crops grown in the province.

Soil and Water

Soil and water resources provide the foundation for agriculture. They must be used responsibly in order to gain optimum benefits now as well as in the years ahead. In 1989-90, the Research Program awarded $578,000 to 17 projects on soil and water concerns to help producers effectively manage these resources.

Several soil-related projects examined techniques, like conservation tillage and legume plowdown, to reduce soil degradation. Others involved methods of fertilizer application. For example, one research project's objective was to create fertilizer recommendations appropriate for today's higher yielding grain varieties, new crops and conservation tillage methods. These recommendations could help farmers to save money and improve yields.

Research projects concerning on-farm water management dealt with such issues as the effects of tillage on soil moisture and methods to enhance water quality in farm dugouts. Farmers in many parts of Alberta depend wholly or partially on dugouts for domestic and livestock drinking water yet more than half of these dugouts have serious water quality problems. Farming for the Future funded a study to evaluate the use of lime applications as a safe and inexpensive way to improve dugout water quality.

In 1989-90, more than 1,072,000 acres were under irrigation in Alberta. Farming for the Future supports research to develop effective management of irrigation water in order to keep costs down, reduce soil degradation and improve yields. Four irrigation research projects were funded last year with a total of $109,000. Topics under investigation were: irrigation scheduling for soft white wheats; flow measurement devices for individual farms; an automated system for precise, intermittent application of irrigation waters; and procedures to optimize reservoir supplies.

Crop Protection and Entomology

Each year, diseases, weeds and harmful insects cause millions of dollars in crop losses in Alberta. With grants totalling $691,000, the Research Program supported 14 projects in 1989-90 to help farmers meet the challenge of controlling pests without harming beneficial insects, wildlife or the soil and water.

Projects receiving grants concerned all types of pests, such as grasshoppers, brown wheat mites, cabbage maggots, western flower thrips, Russian wheat aphids, quackgrass, downy brome and blackleg. Many studies focused on one pest while some took a broad approach. An example of the latter was a project on the use of genetic engineering techniques to develop crop plants which could protect themselves from insects and pathogens.

And farmers themselves were not left out. Researchers on one project assessed the protection against pesticides offered by available workwear, and they determined the effectiveness of laundering techniques for removing pesticide residues. Better protection and better pesticide removal would benefit the health of farm operators.

Grasshoppers are a perennial problem for Alberta farmers. Ongoing work into new biological controls could provide more environmentally friendly means to control these major economic pests.

Livestock Research

Cattle and Sheep

Cattle production is the mainspring of Alberta's livestock industry. In 1989, farm cash receipts from sales of cattle and calves were $1.467 billion. Farm cash receipts from sales of milk and cream added $247 million. As well, sales of sheep and lambs were $7 million. In total, livestock and livestock products make up more than 48% of all Alberta's farm cash receipts.

Last year, Farming for the Future granted $635,000 for research related to this important sector. The 19 research projects covered a broad spectrum of industry concerns. A number of projects investigated digestion in ruminants. For instance, the complex effects of cold temperatures on protein digestion in ruminants were explored in one study. Recent research indicated that voluntary feed intake increased with cold temperatures but the efficiency of protein synthesis also increased. Therefore, this Farming for the Future project evaluated ways that the winter diets of cattle and sheep could be adjusted to significantly lower feed costs while maintaining the required dietary protein levels for growing animals.

Several studies involved disease control in cattle and sheep, including three projects on vaccines against economically important diseases. One of these concerned a vaccine to protect cattle from viral enteric infections. These intestinal infections cost the Canadian livestock industry about $100 million each year. Although there is a vaccine against the rota and corona viruses which cause the infections, it does not provide sufficient protection. Therefore, a Farming for the Future researcher used state-of-the-art biotechnological techniques in the development of more effective vaccines.

New vaccines, developed to prevent infections in newborn calves, are saving Alberta farmers millions of dollars per year.

Like cattle, sheep are ruminants. They are often used as cheaper alternatives to cattle in large animal nutritional studies.

Swine and Poultry

Swine and poultry play a smaller but still important part in Alberta's livestock industry. Farm cash receipts in 1989 from swine sales were $250 million and $141 million from eggs and poultry. Last year, Farming for the Future funded six swine projects with grants totalling $196,000 and three poultry projects with a total of $110,000.

Cost-effective production is an essential element in the success of both these sectors, and several Farming for the Future projects concentrated on this aspect. The number of piglets weaned per sow per year is one of the most important factors affecting profitability in swine production. One study assessed the effects of feed intake by sows on embryo mortality. If embryo survival rates could be increased, the hog industry could reap substantial benefits.

At present, the cost of feed for commercial broilers is about $310 per tonne, but it can fluctuate greatly, depending on the prices charged for imported corn and soybean meal. Previous research revealed the potential to reduce costs by replacing imported feeds with locally-produced barley and canola meal. Farming for the Future funded a project to evaluate the applicability of the results from the earlier, small-scale study to conditions in commercial broiler operations.

Processing and Marketing Research

Processing

Converting primary products into "value-added" commodities is crucial to the long-term economic sustainability of Alberta's agricultural industry. In 1988, the province's shipments of processed food products totalled over $4.5 billion, more than double the total a decade ago. With the advances possible through research, the agricultural processing industry can continue to grow.

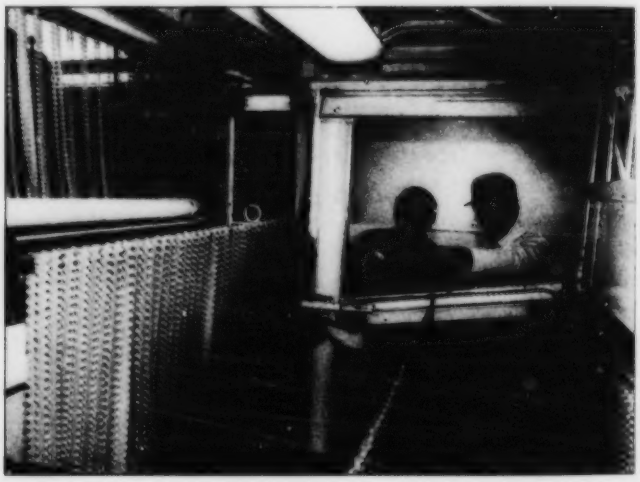
Eight agricultural processing projects were supported with $257,000 from the Research Program in 1989-90. These studies involved new or improved food products and better ways to store and preserve foods. For example, the subject of one project was an innovative system for the preservation of meat. To compete in distant markets, Alberta meat processors need methods to increase storage life while maintaining meat quality. This project investigated biological techniques to reduce spoilage without affecting the taste, odour and colour of the meat.

Pilot (small-scale) production of new food products, such as the sauce being packaged above, often helps point out errors and drawbacks before they become large-scale financial problems.

Marketing and Socio-Economics

Marketing and economics research is a vital component in building a profitable agri-food industry. Knowledge of the demands of local, national and international markets, predicted market trends, opportunities for new products, and business management techniques can help Alberta's agricultural producers and processors to compete effectively in the market place. Farming for the Future is helping researchers to supply this knowledge.

In 1989-90, the Research Program funded eight marketing and economics projects with an allocation of $212,000. Researchers investigated such issues as red meat demand, credit needs of farmers and export markets for barley and wheat. Several projects concerned international trade including a study of the economic feasibility of exporting feedgrain to the northwestern United States. Much of the beef from this region has traditionally been shipped to other parts of the U.S. for finishing. Potentially, they could purchase Alberta feedgrains for finishing the beef within their own region.



Value-added processing provides many benefits to Alberta. The province's farmers profit from increased domestic sales, and Albertans in general benefit from having more local employment and a greater variety of high-quality, locally-processed products.

On-Farm Demonstration Program

The key to the success of the On-Farm Demonstration Program is co-operation. Under this program, farmers work with Alberta Agriculture extension personnel and other specialists to demonstrate and test innovative agricultural techniques. Together they carry out projects which have direct, practical application to local farming operations.

Created in 1982, this program is a valuable tool for communicating new information and techniques to farmers. Field days and tours of project sites give local producers the opportunity to examine improved production of traditional crops, alternative crop options, better livestock management techniques and new methods for soil and water conservation. The projects also assist Alberta Agriculture's district and regional staff and other researchers to become further acquainted with new developments in agriculture and to evaluate future research needs of farmers.

Individual farmers, producer groups and applied research agencies are eligible to apply for funding under the program. Applicants work with Alberta Agriculture staff to develop a project proposal. Then the regional review committee in one of the province's six agricultural regions assesses the proposal. Each committee is composed of farmers and Alberta Agriculture personnel, with farmers forming the majority. The Alberta Agriculture director responsible for the region is the committee's chairman. Every demonstration proposal is considered on the basis of its importance to the region's agricultural sector, the experience of the applicants, the project design, and the size, cost and duration of the proposed project. The proposal and the committee's recommendations are submitted to the Farming for the Future Council for final approval.

From 1982 to March 31, 1990, the program awarded a total of $3.32 million to 683 demonstration projects across the province. These projects have covered an impressive range of topics over the years including: crop varietal trials; evaluations of feed for cattle; comparisons of zero, reduced and conventional tillage; testing of new and unusual special crops; methods to reclaim degraded soils; ways to improve piglet growth rates; and wind and solar power options for farm operations. The topics studied show that Alberta producers are interested in projects on immediate concerns, like improving outputs and reducing costs, and projects on longer-term issues, such as sustaining productivity and increasing diversification in the industry.

In 1989-90, 144 projects (86 new projects and 58 ongoing projects) were supported by the On-Farm Demonstration Program with grants totalling $580,831 (a complete list of these projects appears later in this report). And like the projects funded in earlier years, they had immediate practical value as well as importance for the long-term health of the industry. For example:

- Some producers in southern Alberta studied how to use new techniques to calculate crop water stress and thereby improve irrigation scheduling. Others evaluated agronomic practices for better production of special crops like dry beans, safflower, mustard and flax.

- Projects in south central Alberta included one to develop tasty recipes to encourage Alberta families to increase consumption of barley. As well, a set of demonstrations was conducted to assess methods of supplementing beef cow diets with minor elements to improve animal nutrition.

- Several farmers in north central Alberta held demonstrations to find more effective ways to apply fertilizers to forages to increase yields. Other projects looked at innovative methods of cattle management, including a study of bedding options for cattle stalls and an evaluation of a technique to reduce marketing stress in feeder calves.

- In northeast Alberta, some producers assessed alternatives to summerfallow in order to reduce soil degradation, and several tested the benefits of legumes for long-term soil productivity.

- Producers in northwest Alberta investigated the agronomics of legumes and the use of legumes in livestock rations. One project studied ways to better manage spring snow melt, and several demonstrations examined alternative watering systems for cattle.

- In the Peace River Region, two projects tested techniques to extend the grazing season. Several studies determined guidelines for planting, pruning, fertilizing and watering saskatoons. Other demonstrations concerned the overwintering of honey bees.

These examples show that the On-Farm Demonstration Program supports innovative and practical alternatives to increase agricultural productivity and sustainability. Because of this, the program plays a crucial part in the progress of Alberta's agri-food industry. The active role of farmers — in individual demonstrations and on the Regional Review Committees — ensures that grants are directed to projects on pertinent issues. Alberta Agriculture's extension personnel use their expertise in communication, and in project design and management to transfer new information and techniques as effectively as possible. By working together through the On-Farm Demonstration Program, these two groups are helping to increase technology transfer and build a better future for the industry.

Future Directions

Farming for the Future has served Alberta's agri-food industry through innovative research and technology transfer for over a decade. The results from the program's many projects have made significant contributions to progress in the agri-food industry. Even with its impressive record of accomplishments, Farming for the Future is constantly looking for better ways to evaluate, prioritize and fund agricultural research.

As part of its quest to improve research funding, the Farming for the Future Council has agreed to continue with the steps necessary to merge with the Alberta Agricultural Research Institute in 1990-91. The Council has been working closely with the Institute since its creation in 1987. The forthcoming merger will strengthen this relationship and will enhance the Institute's role as an umbrella organization for research support, co-ordination and planning. Interagency co-ordination is vital for the future of agricultural research in order to ensure that the available dollars are put to the best possible use.

In the year ahead, Farming for the Future will continue to develop and improve its activities in the dissemination of research results. The Ag-Research BBS (a computerized bulletin board system) will be improved to provide better on-line access to more information on agricultural research. Farming for the Future will also be distributing copies of final reports from its research projects to Alberta Agriculture's regional libraries and to other locations where farmers, specialists and scientists will have improved access to them.

For 11 years, Farming for the Future has been a significant player in the long tradition of agricultural research in Alberta. In 1990-91, it will continue to support research and demonstration projects to advance the economic and environmental future of the province's agri-food industry. The results from this important and successful program will continue to have positive, long-lasting benefits for farmers, food processors and all Albertans.

A young boy looks to his grandfather for wisdom and guidance during fall harvest. The job of Alberta's agricultural research community is to ensure there is a viable future for both.

Research Program Project Summaries 1989-90

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
CEREALS AND OILSEEDS			
Breeding Regionally Adapted Canola Cultivars for Alberta Growing Areas • to develop high yielding, disease resistant canola cultivars adapted to the Peace River region and to southern Alberta	R.K. Downey	Agriculture Canada — Saskatoon	80,000
Evaluation and Development of Soft White Spring Wheats for Western Canada • to develop high yielding soft white wheats with good resistance to disease and sprouting	R.S. Sadasivaiah	Agriculture Canada — Lethbridge	78,000
Acceleration of Canola Variety Development for the Peace River and Southern Alberta Regions • to develop canola varieties adapted to the Peace River region and to irrigated dryland conditions in southern Alberta	D.L. Woods	Agriculture Canada — Beaverlodge and Lethbridge	220,000
Intensive Management Systems for Barley, Wheat, and Canola Production • to determine the effects of fertilizers, plant growth regulators, pesticides and stand density on barley, wheat and canola yields	D.C. Penney J.H. Helm	Alberta Agriculture — Edmonton and Lacombe	72,000
Advancing Wheat Adaptability to Acid Soil Conditions, Especially in North Western Alberta • to evaluate several sources of genetic resistance to soil acidity	P.J. Clarke	Agriculture Canada — Beaverlodge	38,000
Understanding and Alleviating Green Seeds in Spring Canola: Impact of Increased Early Frost Tolerance on Degreening • to assess frost tolerance during seed maturation in *Brassica napus*, *B. campestris*, and *B. juncea*, and to identify the superior lines	A.M. Johnson-Flanagan	University of Alberta — Edmonton	56,000
The Use of Microspore Culture to Evaluate Early Generation Hybrid Populations of *Brassica napus* • to test the microspore system for genetically stabilizing early flowering and disease resistant lines in early generations of hybrid *B. napus*	G.R. Stringam	University of Alberta — Edmonton	71,000
Genetic Sources of Herbicide Tolerance in Oats (*Avena sativa* L.) • to identify new sources of genetic resistance to five major wild oat herbicides; and to transfer these genes, through breeding and selection, to the genetic backgrounds of adapted Canadian cultivars	S. Kibite	Agriculture Canada — Lacombe	35,000
Rapid Development of Blackleg Tolerant *B. napus* Canola Cultivars Using Biotechnology • to collect and characterize a wide spectrum of virulent and avirulent isolates of blackleg which infect both Brassica and cruciferous weeds; and to develop a set of differentials to characterize the disease	G.R. Stringam	University of Alberta — Edmonton	25,000
CROP PROTECTION AND ENTOMOLOGY			
Development of Improved Methods of Forecasting Grasshopper Distribution and Abundance • to determine the effects of critical weather factors on grasshopper populations, and to incorporate findings into an improved system of outbreak prediction and description	D.L. Johnson	Agriculture Canada — Lethbridge	41,000
Quackgrass Control in Zero and Conventional Tillage Systems • to assess the effects of precisely timed, low rates of glyphosate (Roundup) and sethoxydium (Poast) on quackgrass control	K.N. Harker W.H. Vanden Born	Agriculture Canada — Lacombe and University of Alberta — Edmonton	64,000
Improving Herbicide Efficiency on Quackgrass and Other Perennial Weeds Which Have Dormant Buds Using PGRs • to determine the effects of plant growth regulators (PGRs) on herbicide efficiency, and to test herbicide/PGR treatments	J.S. Taylor	Agriculture Canada — Lacombe	29,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
Evaluation of Protective Work Wear for Agricultural Workers • to test currently available and new work wear for effectiveness in reducing pesticide penetration	E.M. Crown	University of Alberta — Edmonton	33,000
Effect of Brown Wheat Mite on Barley in Southern Alberta • to gain information on overwintering, dispersal and the effect of cropping practices on population levels of the brown wheat mite, and to determine the feasibility of cultural and chemical control measures	J.R. Byers	Agriculture Canada — Lethbridge	49,000
Cultural and Chemical Control of Downy Brome in Winter Wheat • to determine the time of establishment and effect of soil moisture and temperature on emergence of downy brome in winter wheat, and to test potential herbicides for selective control of downy brome	R.E. Blackshaw	Agriculture Canada — Lethbridge	47,000
Feasibility of Long Term Grasshopper Management • to evaluate the use of bran baits treated with low quantities of insecticide or Nosema locustae in large areas to reduce grasshopper populations	M. Dolinski	Alberta Agriculture — Edmonton	50,000
Screening and Evaluation of Plant Diseases for Biological Control of Weeds • to evaluate known pathogens for use as mycoherbicides, and to continue to screen new material for pathogens	A.S. McClay	Alberta Environment — Vegreville	30,000
Economic Assessment of Cabbage Maggot Damage in Canola • to develop a system for measuring the economic impact of root maggots in canola by using exclusion cages	G.C.D. Griffiths	Griffiths & Griffiths Ecological Consultants — Sherwood Park	35,000
Integrated Pest Management on Greenhouse Cucumbers in Alberta • to evaluate the effectiveness of short-term introductions of *A. cucumeris* against western flower thrips and to develop simple field bioassay techniques for evaluating the effectiveness of pesticides against western flower thrips and other greenhouse pests	M.Y. Steiner	Alberta Environmental Centre — Vegreville	46,000
Detection and Identification of Virulent Strains of *Leptosphaeria maculans* (Blackleg) Using Monoclonal Antibodies • to produce monoclonal antibodies against the virulent strain of *L. maculans;* and to develop an enzyme-linked immunosorbent assay (ELISA) to rapidly detect and identify this fungus in canola seed and other plant tissues	R. Stace-Smith	Agriculture Canada — Vancouver	44,000
Influence of Crop Management on Control of Russian Wheat Aphid • to establish a set of management practices which will help moderate the damage done by the Russian wheat aphid	R.A. Butts	Agriculture Canada — Lethbridge	66,000
Sampling Methods for Russian Wheat Aphid in Cereals • to develop an efficient sampling method to determine when, where, and at what level the Russian wheat aphid is present in a field	R.A. Butts	Agriculture Canada — Lethbridge	72,000
Genetic Engineering of Crop Plants for Enhanced Resistance to Insect Pests and Plant Pathogens • to determine the feasibility of using genetic engineering to enhance the resistance of crop plants to insect damage and invasion by plant pathogenic microorganisms	A.A. Szalay	University of Alberta — Edmonton	85,000
FORAGES			
Low Temperature Nitrogen Fixation for Alfalfa • to evaluate selected strains of *Rhizobia* bacteria for the ability to fix nitrogen in cool conditions	W.A. Rice	Agriculture Canada — Beaverlodge	30,000
Yield and Quality of Pasture Grasses During Initial Spring Growth and Fall Regrowth • to determine how plant maturity, structure, and shape are related to the yield and quality of various pasture grasses	V.S. Baron J.R. King	Agriculture Canada — Lacombe and University of Alberta — Edmonton	35,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
Feasibility of Double Cropping and Intercropping of Winter Cereals for Fall Pasture • to assess intercropping and double cropping of spring and winter cereals as a means of extending the grazing season	V.S. Baron D.F. Salmon	Agriculture Canada — Lacombe and Alberta Agriculture — Lacombe	45,000
Fall Management of Three Orchard Grass Cultivars Under Simulated Intensive Grazing • to evaluate how the timing of late-season grazing affects the winter hardiness and spring regrowth of three orchard grass cultivars	J.R. King	University of Alberta — Edmonton	41,000
Restoration of Overgrazed *Festuca halli* Rangeland by Short Duration Grazing • to redirect research towards an investigation into the use of short duration grazing to restore over-grazed *Festuca halli* rangeland	A.W. Bailey	University of Alberta — Edmonton	22,000
Assessment of Winter Grazing on Rough Fescue Grasslands • to determine the feasibility of winter grazing pregnant cows on rough fescue grassland in the foothills region of Alberta	W.D. Willms	Agriculture Canada — Lethbridge	39,000
IRRIGATION			
Irrigation Scheduling to Maximize Yield of Soft White Wheat Under Intensive Crop Management • to compare the effects of frequent irrigation over the entire growing season with irrigation applied only at critical times	J.M. Carefoot	Agriculture Canada — Lethbridge	39,000
Evaluation of Single Delivery Flow Measurement Devices for Irrigation Application in Alberta • to develop and assess irrigation water metering devices for the individual farm turnout	J. Prozniak	MPE Engineering Ltd. — Lethbridge	28,000
Management Program for Optimizing Irrigation Reservoir Supply Levels • to develop a reservoir management routine which incorporates demands, upstream supply capability and reservoir through-flow routing	J.M. Byrne	University of Lethbridge — Lethbridge	15,000
Development of an Automated Cost-Effective Surge Irrigation System • to develop an automated surge-flow surface irrigation system to provide precise intermittent application of irrigation water, increase irrigation efficiency, and save time	N. Foroud	Agriculture Canada — Lethbridge	27,000
LAND RESOURCES AND ENGINEERING			
Long-Term Influence of Tillage, Straw and Nitrogen on Soil Characteristics and Crop Yield • to evaluate the effects on crop yield of zero tillage versus conventional tillage, straw retention versus removal, and timing and method of nitrogen application	M. Nyborg	University of Alberta — Edmonton	49,000
Annual Legume Plowdown to Replace a Cultivated Fallow • to develop guidelines for the use of annual legume plowdown in order to maintain and improve soil nitrogen and organic matter levels	T.L. Jensen	Alberta Agriculture — Edmonton	48,000
Dryland Farming System Research for South and South Central Alberta • to develop an economic crop production system for the six soil areas in southern and south-central Alberta	R.H. McKenzie	Alberta Agriculture — Lethbridge	70,000
Maximizing Meadow Bromegrass Pasture Yield Through Optimum Fertilizer Nitrogen Management • to compare the efficiency of two nitrogen fertilizers (urea and ammonium) applied to meadow bromegrass in early spring, and to evaluate the influence of time of application on this efficiency	S.S. Malhi	Agriculture Canada — Lacombe	33,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
In-Bin Grain Moisture Monitoring • to test the feasibility of using soil moisture sensors to monitor the moisture content of grain in storage bins, and to establish whether the expansion/contraction of a grain mass can be used as a reliable indication of moisture content	J.J. Leonard	University of Alberta — Edmonton	in progress
Deep Tillage Tools for Soil and Water Conservation • to determine the effect of deep tilling on soil and water conservation, and to assess its long-term benefits	D.S. Chanasyk	University of Alberta — Edmonton	19,000
The Impact of Grazing on Rangeland Hydrology • to study the hydrologic impact of grazing on the sloped areas of the foothills fescue rangelands	D.S. Chanasyk	University of Alberta — Edmonton	42,000
Lessening the Economic Risks Associated with Nitrogen Fertilization of Cereals • to test the agronomic feasibility of various post-seeding methods of applying nitrogen in different soil zones	J. Ashworth	Norwest Soil Research Ltd. — Edmonton	40,000
On Site Biotechnologies for Soil Conservation and Risk Management on Luvisolic Soils • to develop cropping systems which conserve soil, are economically sound, and use biological nitrogen fixation, where practical, to supply nitrogen	W.B. McGill	University of Alberta — Edmonton	60,000
Management of Farm Dugouts as Water Supplies; Use of Lime for Algal Control • to develop a program for the use of lime to provide clean water in farm drinking-water dugouts	E.E. Prepas	University of Alberta — Edmonton, and Alberta Forestry, Lands and Wildlife — Peace River	28,000
Effect of Feeding, Flooring and Ventilation on Size and Character of Airborne Particles in Pig Housing • to study the behavior of airborne particles in an environmentally controlled room containing no animals, pen partitions, feeders, or slatted floors	J.R. Feddes	University of Alberta — Edmonton	35,000
The Pulse Bander: A Conservation Tool for Forage Production • to study the effect of pulse banding fertilizers into established grass cover in order to improve productivity and conserve soil moisture	M.J. Rowell	Norwest Soil Research Ltd. — Edmonton and Agriculture Canada — Lacombe	27,000
Effects of Super Absorbent Polymers on Soil Water Related Properties and Crop Yield • to determine the effects and economic benefits of several of the most effective polymers used to enhance soil moisture characteristics; and to determine the longevity of the polymers in the soil mixture	C. Chang	Agriculture Canada — Lethbridge	24,000
Amelioration of Soil Compaction Problems Through Appropriate Tillage • to determine the effects of soil compaction on: draft, fuel, and energy requirements for different tillage and subsoiling practices; infiltration rate and runoff before and after tillage treatments; and to assess the cost effectiveness of ameliorative treatments	C. Chang	Agriculture Canada — Lethbridge	29,000
Towards a Strategy for Adapting to Climate Change in Alberta • to assess the significance of global climate change predictions to Alberta; and to identify an appropriate climate modelling approach that can be used to develop strategies for adapting to the predicted changes	R.J. Fessenden	Alberta Research Council — Edmonton	9,000
NON-RUMINANTS			
Meat Quality from Pigs Heterozygous for the Halothane Gene in Different Breeds of Pigs • to determine if the Halothane gene is expressed in meat colour and structure scores from pigs that are heterozygous for the Halothane gene	A.P. Sather	Agriculture Canada — Lacombe	22,000
Influence of Dietary Fat Level and Composition on Protein Deposition in the Rapidly Growing Broiler • to assess the effects of diets varying in the level and composition of dietary fat on net protein and energy gain, and to assess the underlying rates of protein synthesis and degradation	V.E. Baracos	University of Alberta — Edmonton	35,000

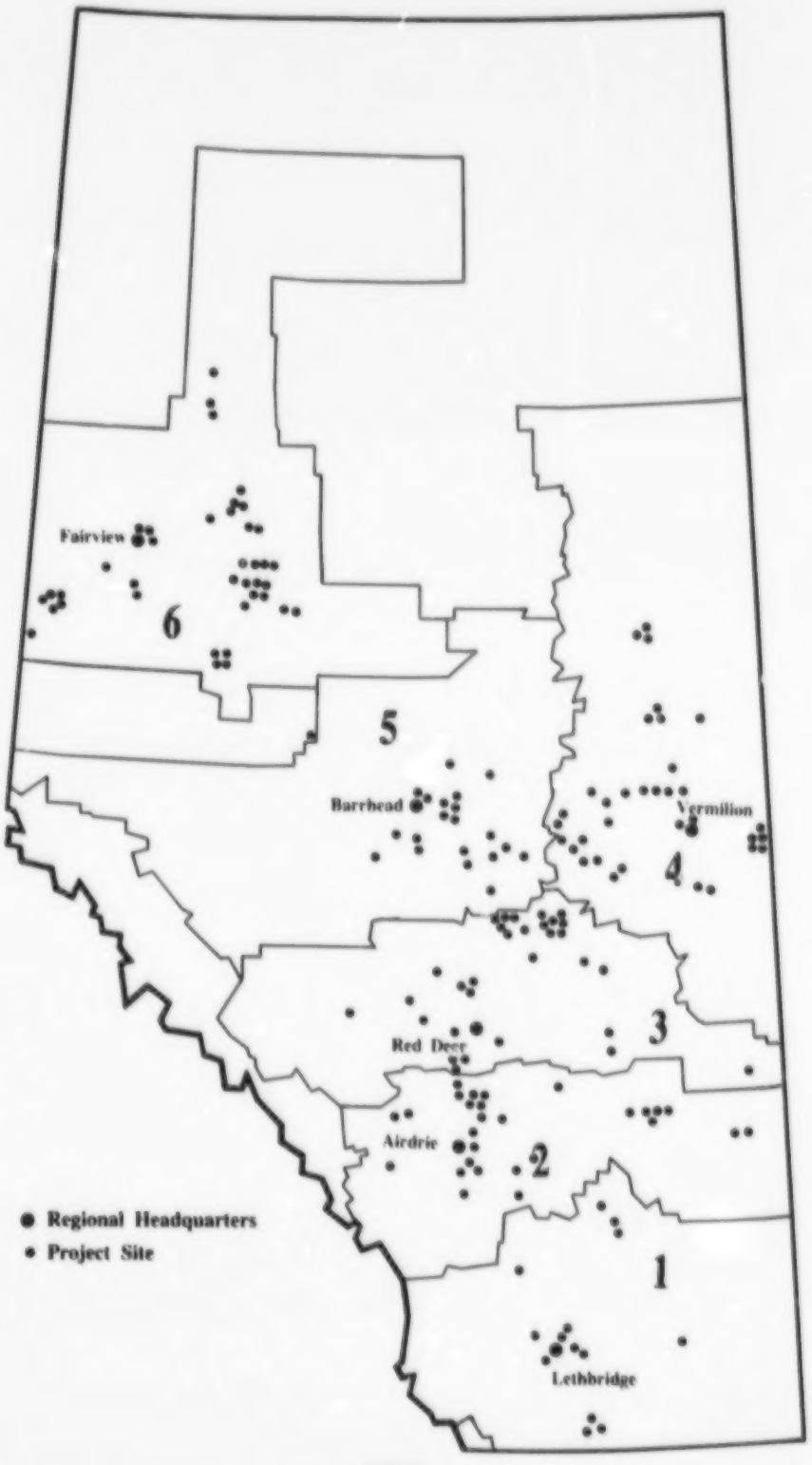
Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
Effect of Immunization of Gilts Against Paternal Antigens on Reproductive Performance • to determine how pre-immunizing young gilts against antigens from boars affects conception rate, ovulation rate and embryo survival	R.J. Christopherson	University of Alberta — Edmonton	46,000
Post-Weaning Nutrition of the Pig: Nutrient Interactions Among Dietary Components • to determine the optimum levels of digestible protein, amino acids, fat and fiber in diets of early-weaned pigs	W.C. Sauer	University of Alberta — Edmonton	43,000
The Effects of Nutrition on Embryo Mortality in Swine • to determine the effects of normal or high feed intake levels in early gestation on embryo mortality and sow weight loss during lactation, and to determine the hormonal profile of sows fed high or low levels during lactation and early gestation	F.X. Aherne	University of Alberta — Edmonton	27,000
Nutritional Significance of Biologically Enriched Egg Yolk with Omega-3 Fatty Acids • to develop eggs and egg products biologically enriched with Omega-3 fatty acids by including full-fat canola, flax seed or fish products in laying-hen diets	J.S. Sim	University of Alberta — Edmonton	39,000
Evaluation of Full-Fat Canola and Barley in Commercial Broiler Diets • to compare high and low energy diets containing 60% Barlean with conventional wheat/corn/soybean meal diets used in commercial production	R.E. Grimson	Lakeside Feeders Ltd. — Brooks	36,000
The Formulation of Pig Diets on the Basis of the Digestible Amino Acid Supply • to determine the various advantages of formulating swine rations on the basis of ileal amino acid digestibility values	W.C. Sauer	University of Alberta — Edmonton	23,000
PROCESSING AND MARKETING			
Immobilization Technology for Accelerated Canola Sauce Fermentation • to develop a technique that would reduce the costs and time needed to produce a canola-based substitute for soy sauce	B. Ooraikul	University of Alberta — Edmonton	48,000
Use of Biotechnology to Develop Innovative Systems for Preservation of Meats • to select and develop strains of bacteria that will inhibit spoilage and disease-causing bacteria in meats	M.E. Stiles	University of Alberta — Edmonton	38,000
Feasibility of Lactic Acid Starter Culture Production in Alberta • to evaluate various strains of bacteria used in cheese production in order to establish a starter culture industry in Alberta	M.E. Stiles	University of Alberta — Edmonton	30,000
A General Equilibrium Model of Alberta's Agricultural Sector • to develop a model of the Alberta economy emphasizing the agricultural sector, and to use this model to evaluate policy initiatives	M.B. Percy	University of Alberta — Edmonton	8,000
Export Markets for Canada's Foodgrains and Feedgrains • to assess the market prospects for Western Canadian barley and wheat in the balance of the 1980s	T.S. Veeman	University of Alberta — Edmonton	34,000
Farm Agricultural Data Sources and Needs, and Related Planning • to identify the present and potential agricultural and financial data needs of Alberta's agricultural researchers, policy-makers, managers and advisors	G.A. Mumey	University of Alberta — Edmonton	35,000
Incidence, Origin and Control of Pathogenic Bacteria in Raw Milk and Milk Products • to determine the incidence of pathogenic bacteria in the raw milk supply in Alberta (specifically *Salmonella, Listeria,* and *Campylobacter*) and the origin of pathogenic isolates, and to develop a strategy to limit the numbers of pathogenic organisms in raw milk and dairy products	H. Jackson	University of Alberta — Edmonton	16,000
Future Directions for the Alberta and Canadian Sheep Industry • to analyze the factors responsible for the decline in the Canadian sheep industry, and to identify the appropriate future direction for the industry	M.H. Hawkins	University of Alberta — Edmonton	16,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
The Demand for Red Meats and Related Foods in Canada • to derive updated and more comprehensive estimates of the demand relationships for red meats and related foods in Canada, and to assess factors underlying changes in consumption patterns for red meats in recent years	M.M. Veeman	University of Alberta — Edmonton	35,000
Comparative Evaluation of Commercial Milk Coagulants for Increased Cheese Production Efficiency and Quality • to study the qualitative and quantitative proteolytic characteristics of milk clotting enzymes in commercial coagulants used in Alberta	F.H. Wolfe	University of Alberta — Edmonton	35,000
Macroeconomic Impacts on Canadian Agricultural Prices • to assess the impact of macroeconomic forces on prices paid by producers as well as on the prices they receive and the resulting impact on agricultural terms of trade	W.L. Adamowicz	University of Alberta — Edmonton	22,000
Analysis of Alberta Honey Composition to Aid Honey Exports • to establish quality factors in Alberta honey samples including detailed sugar composition, enzyme levels, the amino acid proline, moisture and acidity, and ash levels	P. Sporns	University of Alberta — Edmonton	31,000
Economic Feasibility of International Trade in Feedgrains Between Alberta and the Northwestern U.S.A. • to assess the economic feasibility of exporting barley from Alberta to the U.S. given price and cost conditions characteristic of the 1980s	M.L. Lerohl	University of Alberta — Edmonton	22,000
Evaluation of the Capital and Credit Needs of Alberta Farmers • to develop a farm capital and credit model to estimate capital and credit needs of Alberta farmers over the next five years	R.W. Ashmead	AgriTrends Research Inc. — Calgary	40,000
Frying Performance of Canola Fats and their Effects on Convenience Food Quality • to evaluate the frying performance of canola fats and commonly used frying fats; and to assess their effect on the quality of convenience foods using sensory, chemical and instrumental methods	Z.J. Hawrysh	University of Alberta — Edmonton	32,000
The Effects of Spray-Chilling on Beef Quality and Spoilage • to determine the effects of the duration of intermittent water sprays on carcass shrink and on muscle quality, purge loss and bacterical spoilage of boxed beef	G.G. Greer	Agriculture Canada — Lacombe	27,000
RUMINANTS			
Vitamin E and Selenium Deficiency: Immunological Manifestations • to study the effects of vitamin E and selenium deficiencies on disease problems in livestock	B.R. Blakley	Western College of Veterinary Medicine — Saskatoon	34,000
Manipulation of Hormones in Calves to Improve Their Rate of Growth • to evaluate methods of immunizing calves against somatostatin (an inhibitor of growth hormone release), and to determine the effects of this immunization on calf growth rates and feed efficiency	G.J. Mears	Agriculture Canada — Lethbridge	45,000
Effect of Rumen Microbial Metabolism on Selenium Requirements of Ruminants • to study the availability of selenium under different dietary regimes in order to more accurately determine selenium requirements	L.M. Rode	Agriculture Canada — Lethbridge	40,000
Vaccines Against Viruses Causing Bovine Respiratory Disease • to reduce losses due to shipping fever by developing better vaccines and improving the animal's ability to fight off the disease	L.A. Babiuk	Western College of Veterinary Medicine — Saskatoon	58,000
Endocrinological and Genetic Analysis of Superior Growth in Cattle • to characterize hormonal and genetic factors involved in growth regulation in cattle	R.K. Salmon	University of Alberta — Edmonton	30,000
Influence of Temperature on Protein and Amino Acid Digestion in Ruminants • to assess the effect of a cold environment on amino acid digestion, and to determine optimal dietary requirements in cold and warm environments	R.J. Christopherson	University of Alberta — Edmonton	25,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
Association of Respiratory Tract Colonization with Adherence of *Pasteurella haemolytica-A1* to Epithelial Cells • to determine if an association exists between colonization of the bovine respiratory tract by *Pasteurella haemolytica* and increased in vitro adherence of this bacterial species to bovine oropharyngeal epithelial cells	J.W. Costerton	University of Calgary — Calgary	24,000
Development of a Recombinant Vaccine to Bovine Rotavirus/Coronavirus • to develop and test recombinant DNA produced vaccines against rota and coronavirus infections, and to develop an oral delivery system for these vaccines	L.A. Babiuk	Western College of Veterinary Medicine — Saskatoon	38,000
The Enhancement of Casein Production Through Genetic Manipulation of a Bovine Casein Gene • to increase milk's protein content by genetically engineering a highly active K-casein gene	R.K. Salmon	University of Alberta — Edmonton	40,000
Rates of Digesta Flow and Rumination in Cattle • to determine the importance of rates of passage and amount of chewing on voluntary intake, digestibility, and energy losses	G.W. Mathison	University of Alberta — Edmonton	35,000
Influence of Somatostatin on Cold Tolerance in Ruminants and Response to Somatostatin Antibodies • to determine the role of somatostatin in regulation of body temperature, energy, protein metabolism and digestion in different environmental conditions, and to determine whether treatment with antibodies to somatostatin will improve cold tolerance of the newborn and growth and feed efficiency in cold environments	R.J. Christopherson	University of Alberta — Edmonton	30,000
Factors Affecting the Accuracy of Bull Evaluation for Gain in Bull Test Station • to estimate the minimum length of test period needed for proper evaluation of weight-gain potentials of bulls, and to quantify the relative importance of age, birth weight, initial weight, age of dam, et cetera on variation in weight gain	M. Makarechian	University of Alberta — Edmonton	6,000
Comparison of Natural Service Fertility of Yearling and Two-Year Old Bulls • to compare the fertility of bulls under different breeding pressures	M. Makarechian	University of Alberta — Edmonton	8,000
The Importance of Maintaining Normal Blood Potassium Levels When Treating Grain Overload • to determine whether hypokalemia (decrease in blood potassium levels) consistently develops in cattle experiencing grain overload	E.C. Crichlow	University of Saskatchewan — Saskatoon	34,000
Development of a Haemophilus somnus Animal Model and Testing of Vaccine Components • to develop a challenge model in calves which accurately reproduces the clinical symptoms, pathological features, and general disease progression of H. somnus infections as they are seen in natural field outbreaks; and to develop and test vaccines which would protect calves from developing H. somnus pneumonia and other H. somnus infections	H.G. Deneer	Veterinary Infectious Disease Organization — Saskatoon	38,000
Viral Infection Dynamics in Pre-Weaned and Early Feedlot Beef Calves • to determine the time sequence or dynamics of natural individual and multiple concurrent viral infections (IBRV, PI_3, BRSV, and BVDV) in post-weaned feedlot calves by low-impact serial serological testing	D. Armstrong	Alberta Agriculture and University of Alberta — Edmonton	38,000
The Role of Anaerobic Rumen Fungi in Cellulose Digestion and Animal Nutrition • to isolate the predominant rumen fungi found in ruminants fed a variety of common forage and/or concentrate diets; and to develop a profile of feed-dependent fungal colonization of ruminants in Alberta	K.-J. Cheng	Agriculture Canada — Lethbridge and University of Calgary — Calgary	40,000
Use of Neutral Detergent Fibre in Dairy Cattle Diet Formulation • to evaluate the effects of forage quality on the concentration of dietary neutral detergent fibre necessary to optimize rumen function and productivity of dairy cows	K.A. Beauchemin	Agriculture Canada — Lethbridge	45,000
Effects of Oil Treatment of Grains on Rumen Digestion and Animal Performance • to compare digestion of physically processed grain treated with specific levels of canola oil; and to assess the capacity of canola oil to alter the site of starch digestion in feedlot cattle	K.-J. Cheng	Agriculture Canada — Lethbridge	27,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1989-90
SPECIAL CROPS			
Safflower Management for Optimizing Yield and Quality • to evaluate safflower management techniques in order to prepare a detailed safflower production package	H.H. Muendel B. Roth	Agriculture Canada — Lethbridge and Alberta Agriculture — Lethbridge	61,000
Control of Bacterial Ring Rot and Blackleg Symptomless Infections of Potato • to study the symptomless phases of two potato diseases to determine the conditions necessary for their occurrence	S.H. DeBoer	Agriculture Canada — Vancouver	41,000
Increasing Tuber Yield by Manipulating the Physiological Age of Potato Seed Tubers • to investigate the effects of storage temperature on tuber yield, grade and earliness	N.R. Knowles	University of Alberta — Edmonton	58,000
Agronomic Studies Emphasizing Uniform, Earlier Establishment, Maturity and Adaptability of Cool Season Pulse Crops • to study agronomic practices for improved production of lentils, peas and fababeans	R.G. Gaudiel	Alberta Agriculture — Brooks and Lacombe	48,000
Adaptability and Agronomic Practices of Herbs, Spices and Essential Oil Crops for Alberta • to determine agronomic practices for commercial production of herbs and spices in Alberta	R.G. Gaudiel	Alberta Agriculture — Brooks	25,000
Disease Elimination in Potato Breeding Clones • to develop a source of disease-tested seed of clones included in the regional trial system of the potato breeding program	D.R. Lynch	Agriculture Canada — Lethbridge	51,000
Salinity and Cold Tolerance of Ornamental Trees • to develop reliable recommendations under field conditions for salinity and cold tolerance of several species of trees and shrubs grown in Alberta	R.C. McKenzie	Alberta Special Crops and Horticultural Research Center — Brooks	17,000
Overwintering Container Stock: How Dormancy Relates to Root and Shoot Cold Hardiness • to characterize factors controlling root hardiness; and to determine the relationship between dormancy and shoot and root cold hardiness	H.M. Mathers	Alberta Special Crops and Horticultural Research Center — Brooks	9,000
Commercial Adaptability, Feasibility, and Management Practices of Selected Essential Oil and Spice Crops in Alberta • to evaluate and determine the commercial adaptability of spice crops using commercial equipment for establishment, maintenance, harvesting, and processing operations	R.G. Gaudiel	Alberta Special Crops and Horticultural Research Center — Brooks and Alberta Agriculture — Lethbridge	39,000

On-Farm Demonstration Project Sites



On-Farm Demonstration Program Project Summaries 1989-90

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
REGION I - SOUTHERN ALBERTA			
Field Verification of Innovative Alternative Crop Production Techniques • to assess the production of safflower, sunflower, pulses, corn, and spices	Alberta Pulse Growers Commission *Lethbridge*	Blair Roth *Lethbridge*	21,030
Edible Soymeal Viability • to assess the economic and agronomic benefits of soybean production	Mutt Tsukashima *Coaldale*	Blair Roth *Lethbridge*	3,680
Applying Infra Red Stress Monitor to Irrigation Scheduling of Alfalfa Seed • to assess crop stress using a plant stress monitor gun	George-Anne Rasmussen *Brooks*	Gordon Frank *Brooks*	14,225
Solonetzic Soil Improvement • to assess the use of manure to improve soil structure and fertility	Bill Van Roeselaar *Fort McLeod*	Brian Laing *Claresholm*	1,065
Saline Plant Toxicity • to sample plant material (domestic grasses, forages, and invader type species) used in livestock feed and to have it analyzed for nutrient levels	Dryland Salinity Control Association *Warner*	Don Wentz *Lethbridge*	2,187
Field Implementation of Infra-Red Thermometry Technology for Scheduling Irrigation • to train farmers and industry in the techniques of determining baselines from which they can calculate crop water stress index	Alberta Corn Committee *Lethbridge*	Blair Roth *Lethbridge*	12,700
Irrigated Alfalfa Fertility Trial • to determine yield response of irrigated alfalfa to nitrogen, phosphorous, and potassium fertilizers	Gross Brothers *Bow Island*	Ken MacPhail *Bow Island*	1,642
Quinoa Production in Southern Alberta • to assess the economics of Quinoa production as a crop alternative for dryland producers	Paul Schamber *Milk River*	James Hironaka *Warner* Blair Roth *Lethbridge*	935
Intensive Safflower, Mustard and Flax Agronomy Program for Southern Alberta Conditions • to evaluate and display the agronomic practices and economic results of growing alternative oilseed crops in southern Alberta	Alberta Safflower Growers Association *Lethbridge*	Blair Roth *Lethbridge*	19,510
The Potential for Upright Dry Beans in Southern Alberta • to introduce growers to the cultivation of upright beans and compare agronomic practices with conventional vineytype varieties	Alberta Pulse Growers Commission *Lethbridge*	Blair Roth *Lethbridge*	14,490
Economics of Manure Composting in Southern Alberta • to examine the feasibility of composting the waste products of an intensive livestock operation for soil fertility improvement	Dwight Perry *Coaldale*	Michael Clawson *Lethbridge*	8,747
Dryland Alfalfa Fertilizer Management • to demonstrate the benefits of phosphorous fertilizer management practices in spreading the cost of establishing dryland alfalfa stands	John Lutz *Warner*	Don Wentz *Lethbridge*	1,200
The Use of Simple Huts for Outdoor Farrowing to Facilitate Depopulation • to assess and demonstrate the benefits for cleaning purposes of a temporary depopulation of farrowing facilities into cheap outdoor farrowing huts	Murray Markert *Vulcan*	E. Alan George *Lethbridge*	3,089
Growth Characteristics and Subsequent Yield of Alfalfa Seed Under Various Irrigation Practices • to demonstrate the advantages of record keeping and data collection in irrigated alfalfa seed production	Irrigated Alfalfa Seed Producers *Rosemary*	Gordon Frank *Brooks*	8,670

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
REGION II - SOUTH CENTRAL ALBERTA			
Remote Control Bale Weight Adjustment • to develop an attachment for a hay baler that permits adjustment of bale weights from the tractor cab	John Reid *Cremona*	Steve Archibald *Olds* Rich Smith *Airdrie*	1,500
Banding vs Broadcasting Fertilizer on Hayland • to test whether banding equal amounts of fertilizer is more cost-effective than broadcasting fertilizer on hayland	Don Green *Millarville*	Allen Toly *High River*	1,926
Saskatoon Production Transplant - Survival and Hardiness and Non-Chemical Weed Control • to assess the production of Smoky and Northline saskatoons, and to evaluate a method of weed control in these two varieties	Bill & Dorothy Jackson *Calgary*	Allen Toly *High River*	1,088
Expected Progeny Difference (EPD) Accuracy and Evaluation of Various Carcass Traits • to demonstrate the accuracy of EPD data, and to evaluate various carcass traits	Canadian Hereford Association *Calgary*	Don Milligan *Airdrie*	4,760
Test Underseeding Italian Rye for Late Season Grazing • to evaluate the underseeding of fall rye and Italian rye grass to barley for greenfeed under irrigation	David Kent *Beiseker*	Brenda Ralston *Calgary*	1,515
Increasing Barley Consumption by Humans • to demonstrate the feasibility of using barley in the human diet and to subsequently encourage Alberta families to add barley to their diets by providing tested recipes in a booklet form	Alberta Barley Boosters *Cremona*	Karen Hoover *Olds*	2,585
Toadflax Control with Fallow and Herbicides • to demonstrate chemical and cultural methods of controlling toadflax	Laycraft Farms Ltd. *Blackie*	Allen Toly *High River*	754
Improve Feed Efficiency in Feeder Cattle During Heat Stress Period • to test the coolant effect of a spray mist of water on feeder cattle	Ed Miller *Acme*	Rich Smith *Airdrie*	5,900
Comparative Economics of Exportable Alfalfa Hay Production and Harvest • to collect economic data to determine the additional cost of producing and harvesting exportable densified alfalfa hay	Western Hay Producers & Marketing Commission *Rockyford*	John Portail *Strathmore*	2,925
Comparison of Different Fungicides for the Control of Leaf Disease in Barley • to assess the use of different fungicides on barley	Joe Jeffray *Airdrie*	Barb Archibald *Airdrie*	1,620
Effects of Foliar Applied Nutrients on the Yield, Maturity and Protein Content of Barley • to determine if an economical response can be obtained through foliar application of micronutrients to barley	Don Copley *Crossfield*	Barb Archibald *Airdrie*	2,878
Testing Windscreens for an Open Fronted Hay Shed and an Open Fronted Dairy Heifer Barn • to test the effectiveness of two types of windscreens	Steve and Isabel Warrington *Olds*	Steve Archibald *Olds*	1,360
Kochia Grown on Saline Soil for Silage • to demonstrate the use of kochia as an alternative crop in reclaiming saline areas	Greg Bates *Acme*	Jeff Millang *Three Hills*	797
Demonstrating Methods of Increasing Heifer Replacement Conception Rates • to demonstrate methods of increasing heifer replacement conception rates	Bill Bateman *Calgary*	Don Milligan *Airdrie*	4,155
Integrated Beef and Sheep Production • to demonstrate the low cost modification of existing beef facilities to accommodate both an intensive sheep production enterprise and beef cattle enterprise	Ed and Marilyn Verweire *Strathmore*	Scott Meers *Strathmore*	1,789
Use of Nitrogen on Native Pasture to Improve Production and Utilization • to demonstrate the use of nitrogen on native pasture to improve production	Stan Richmond *Rumsey*	Don Poisson *Drumheller*	1,150

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
Ultrasonics as a Grouping and Shipping Tool • to evaluate and demonstrate the use of ultrasonics in feedlots (300-1000 head capacity) as a grouping and sorting tool for slaughter cattle	Keith Doerksen *Trochu*	Jeff Millang *Three Hills*	3,900
Demonstration of the Most Effective Commonly Used Method of Selenium Supplementations • to demonstrate the differences between delivery systems for supplementary selenium in the diets of beef cows	Evans Hereford *Three Hills*	Don Milligan *Airdrie*	6,700
Demonstration of the Most Effective Commonly Used Method of Selenium Supplementations • to demonstrate the differences between delivery systems for supplementary selenium in the diets of beef cows	Greg Gordon *Hanna*	Don Milligan *Airdrie*	6,700
Demonstration of the Most Effective Commonly Used Method of Selenium Supplementations • to demonstrate the differences between delivery systems for supplementary selenium in the diets of beef cows	Milo Munro *Cochrane*	Don Milligan *Airdrie*	6,700
Demonstration of the Benefits of Using A Mineral/Vitamin Supplementation Program • to demonstrate the effects of a year-round supplementation program on beef cattle breeding, calving and weaning	Blaine McIntyre *High River*	Don Milligan *Airdrie*	2,550
Usefulness of the Colostrum Evaluation - "Colostrodoser" • to test the practicality of using the "Colostrodoser" on dairy farms as a method of delivering sufficient colostrum to new born calves	Kristine and Eric Leth Iverson *Olds*	Dennis Lowry *Airdrie*	1,956
Feeding of Condor Barley to Grower Pigs • to determine if Condor barley would be a suitable replacement for wheat and/or hulled barley in grower hog rations	Lance Wheeler *Dalemead*	Marvin Solomons *Airdrie*	5,565
REGION III - NORTH CENTRAL ALBERTA			
Benefits of a No-Till Cereal Production on Light Soil in the Pine Lake Area • to evaluate soil conservation and erosion control under zero tillage	Larry Andrews *Innisfail*	Grant Lastiwka *Innisfail*	1,550
Effects of Cover Crop on Establishment and Future Yields of Smooth Brome and Alfalfa • to assess the effect of a cover crop on the establishment and yield of a smooth brome-alfalfa mix	Battle River Forage Association *Camrose*	George Rock *Camrose* Bjorn Berg *Vermilion*	1,680
Effects of Banding Fertilizer on Established Perennial Forages with a Knife Applicator • to determine the efficiency of using a "Vern Knife" applicator to apply various rates of fertilizer to established stands of mixed grass-legume forages	Battle River Forage Association *Camrose*	George Rock *Camrose* Bjorn Berg *Vermilion*	4,639
Chemical - Fallow Control of Leafy Spurge • to evaluate the use of Tordon 22K (picloram) and extra summerfallow operations to control leafy spurge	Don Hundeby *Wetaskiwin*	Hector Goudreau *Wetaskiwin*	1,642
Effect of Supplemental Protein Meal on Gain of Nursing Calves on East Central Alberta Pastures • to evaluate the benefit of feeding supplemental protein meal to nursing calves	Chinook Applied Research Association *Oyen*	Doug Cornell *Coronation*	3,857
Field Pea Variety Testing and Agronomic Study • to provide producers with information that will allow them to choose pea varieties best suited to their local areas	Central Alberta Branch, Alberta Pulse Growers Commission, *Camrose*	Neil Miller *Lacombe*	6,965
Comparison of Precision Fertilizer Placement versus Random Banding • to compare precision fertilizer placement with conventional random banding	Windy Point Farms *Sylvan Lake*	Ted Nibourg *Red Deer*	1,514

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
Precision Placed Fertilizer versus Random Banding • to compare precision fertilizer placement with conventional random banding	Rick Deacon *Penhold*	Ted Nibourg *Red Deer*	1,221
Special Crops Project • to demonstrate the success of alternate cash crop choices	Battle River Applied Research Association *Camrose*	Robert Dunn *Stettler*	8,035
Effect of Banding High Phosphate Fertilizer on Established High Legume Forages with a Knife Applicator • to determine the effect of using a "Vern Knife" applicator to apply various rates of high phosphate fertilizer to established high legume forages	Battle River Forage Association *Camrose*	George Rock *Camrose*	3,585
Prescribed Burning and Intensive Grazing to Control Aspen Poplar in the Southeastern Parkland • to assess the use of burning and intensive grazing to control aspen poplar regrowth	Pat Rutledge *Monitor*	Doug Cornell *Coronation*	6,800
Maximum Economic Yield Demonstration • to demonstrate maximum economic yield while evaluating added fertilizer, fungicide and plant growth regulators	Pat Durand *New Norway*	David Samm *Camrose*	1,590
A Fluid Based Geothermal Air Conditioning System • to design a cooling system based on a geothermal temperature exchanger system and to demonstrate this system in a chinchilla barn	Don Walkey *Innisfail*	Robert Borg *Red Deer*	3,000
Perennial Forage Establishment Demonstration • to demonstrate and compare various establishment techniques for a crested wheatgrass/alfalfa mixture	Chinook Applied Research Association *Oyen*	Doug Cornell *Coronation*	1,806
The Effect of 48-Hour Calf Removal on Reproductive Efficiency in a Commercial Cow/Calf Herd • to determine if 48-hour calf removal (on only late calving cows) is a cost effective method of shortening the calving period and to assess the effect of calf removal on pregnancy rates, calf morbidity and mortality	Bill Hunt *Endiang*	Curtis Weeks *Stettler*	600
The Effect of Different Ivermectin Treatments on Yearling Weight Gain on Pasture • to determine the cost effectiveness of two ivermectin treatments on yearling steers	Murray Stauffer *Eckville*	Dale ZoBell *Red Deer*	3,940
Grazing Trial Using a Spring Cereal - Winter Cereal Intercrop System • to compare fall grazed intercropped winter cereals with fall grazed tame, perennial pastures and to determine the feed value and fall production of intercropped winter cereals	Grey Wooded Forage Association *Lacombe*	Arvid Aasen *Lacombe*	2,520
Maintaining a Legume Stand by Annual Overseeding • to determine if annual overseeding of a legume into an existing stand can aid in maintaining the legume component of the stand	Grey Wooded Forage Association *Rocky Mountain House*	Ken Ziegler *Rocky Mountain House*	2,710
Testing of Cow Pillows in Freestalls • to test the use of cow pillows, rather than straw or shavings for bedding in free stalls	College Dairy Ltd. *College Heights*	John Vanderleest *Red Deer*	420
Repair of Chemically Eroded Milkhouse Floor by Using Different Sealers • to assess the effectiveness (durability and ease of cleaning) of varieties of sealers used to repair chemically eroded milkhouse floors	Harry Ekkel *Lacombe*	Ross Smith *Red Deer*	1,525
Evaluation of Pussy Willow Cultivars for Mechanical Harvest for the Wholesale Florist Trade • to evaluate the mechanical harvesting and packing of willows for the wholesale florist industry; and to conduct varietal trials to test yield and winter hardiness of willow cultivars when heavily pruned by mechanical harvesting	Arden Delidais *Elnora*	Grant Lastiwka *Innisfail*	436
The Effect of Potassium Carbonate Desiccation on Alfalfa Quality • to evaluate the quality of potassium carbonate-sprayed alfalfa compared to non-sprayed alfalfa to calculate the reduction in drying time of two rates of potassium carbonate sprayed alfalfa over a variety of environmental conditions	Leon Specht *Millet*	Jay Byer *Wetaskiwin*	2,173

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
Copper Fertility Trial • to identify copper deficient areas and to assess the effect of copper sulphate ($CuSO_4$) application on various crops	Marvin Nakonechny *Millet*	Jay Byer *Wetaskiwin*	1,591
Maximum Economic Yield Demonstration • to evaluate the effects of added fertilizers, fungicides and plant growth regulators applied to barley stubble on subsequent crops	Earl Rasmuson *Gwynne*	Hector Goudreau *Wetaskiwin*	1,676
Intercropping of Cash and Forage Crops • to demonstrate the intercropping of cash cover crop (wheat, barley, oats and canola) with an annual forage (fall rye, winter triticale) as a means of extending the grazing season	Battle River Applied Research Association *Lougheed and Castor*	Bruce Friedel *Sedgewick*	3,735
The Effect of High Moisture Barley on Gain and Feed Efficiency in Growing and Finishing Steers • to evaluate the effect on average daily gain and feed efficiency of four high moisture barley treatments and to determine if there is an economic benefit of either rolled or ammoniated high moisture barley fed to growing or finishing steers	FEM Farms *Lacombe*	Dale ZoBell *Red Deer*	10,175
Foliar Fertilizer Response on Cereal Crops • to determine if plants respond to macro- and micro-nutrients from foliar feeding	Darryl Holmstrom *Killam*	Bruce Friedel *Sedgewick*	1,400
Storage of High Moisture Barley in Epoxy Lined Hopper Bottomed Steel Bins • to determine if a modified hopper bottomed steel bin can be used as an oxygen limiting structure for ensiling and/or storing high moisture grain	David Rainforth *Lacombe*	Neil Miller *Lacombe*	21,700
Evaluation of Nutra-Shield as an Alternative to Plastic for Covering Barley Silage • to evaluate Nutra-Shield with reference to its ease of handling, storage and sealing properties on silage and economic value, and to compare it to a plastic covering	Anchor Y Cattle Co. Ltd. *Bowden*	Grant Lastiwka *Innisfail*	1,130
The Cost of Marketing Stress in Feeder Calves and the Effect of Electrolyte Supplementation on its Resolution • to determine the actual cost of marketing stress in feeder calves and to examine the effect of electrolyte supplementation on calf performance, morbidity and mortality	Ian Stewart *Bittern Lake*	George Rock *Camrose*	6,600
REGION IV - NORTHEAST ALBERTA			
Evaluating the Economic Productivity of a Rotational Grazing Scheme on Solonetzic Soils • to determine the economics of rotational grazing on solonetzic soils	Richard Mandryk *Lamont*	Emile de Milliano *Lamont*	1,134
A Beef Herd Management Plan for Improving Production Efficiency of a Cow-Calf Operation • to demonstrate management indicators that will improve production efficiency and profitability in cow-calf operations	Lamont Beef Herd Management Club *Lamont*	Emile de Milliano *Lamont*	4,026
Efficacy of Using Pelvic Area Measurements as a Criteria for Culling Replacement Heifers • to determine if pelvic area measurements can be used to predict calving difficulty, and thus be used as a practical culling tool	Tofield Beef Club *Tofield*	Tennis Marx *Ryley*	1,100
Efficacy of Using Pelvic Area Measurements as a Criteria for Culling Yearling Beef Heifers • to determine if pelvic area measurements can be used to predict calving difficulty, and thus be used as a practical culling tool	Vermilion Beef Club *Vermilion*	Josie Van Lent *Vermilion*	1,650
Comparison of Two Methods of Fertilizer Application on Established Hayland • to compare mechanical rejuvenation with liquid fertilizer on an established hay stand	Brian Lyons *Ryley*	Tennis Marx *Ryley*	760
Comparison of Deep Tillage Methods on Grey Wooded Soil • to demonstrate different deep tillage methods on grey wooded soils	Eugene Snyder *Glendon*	Ron Hockridge *Bonnyville*	1,250

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
Evaluation of Species of Grasses for Grazing Purposes • to determine the grazing productivity of several grass species	Lakeland Forage Association *Bonnyville*	Harvey Yoder *Lac La Biche*	835
Out of Season Breeding of Romanov Sheep • to assess economic value, daily gain and overall productivity of ewes lambing every eight months	Tom Makowecki *Musidora*	Shane Dobson *Two Hills*	3,810
Maximum Economic Yield Demonstration Project • to determine the economics of fungicide and plant growth regulators applied to barley on normal and high fertility regimes	Ken Rempel *Tofield*	Tennis Marx *Ryley*	4,097
Banding versus Broadcast of Forage Fertilizer • to assess the use and efficiency of a new forage fertilizer banding knife	William Wasylechko *Smoky Lake*	Don Christensen *Smoky Lake*	3,373
Soil Conservation and Improvement - Alternatives to Conventional Summerfallow • to assess methods of preventing soil erosion, and to demonstrate the use of legume crops to improve long-term productivity	Mark Perkins *Wainwright*	Rick Klippenstein *Wainwright*	396
A Demonstration of Indian Head Lentils as an Alternative to Summerfallow • to demonstrate the use of Indian Head lentils as an alternative to summerfallow	Dave Stuart *Vegreville*	Jeff Beckingham *Vegreville*	600
Fertility Pasture to Provide Growth Throughout the Grazing Season • to determine the dry matter production and the economic response of nitrogen application to tame pastures	Lakeland Forage Association *Lac La Biche*	Harvey Yoder *Lac La Biche*	6,875
Erosion Prevention and Soil Improvement - Alternatives to Conventional Summerfallow • to demonstrate methods of protecting soil from wind and water erosion, to demonstrate the effects of Indian Head lentils on long term soil productivity and to evaluate the economics of these alternatives to conventional summerfallow	Mark Perkins *Wainwright*	Rick Klippenstein *Wainwright*	1,090
Yield Assessment - Acid Base Liquid Nitrogen versus Granular Dry Nitrogen Fertilizer • to assess the yield response of cereals to acid based liquid nitrogen versus granular nitrogen fertilizer	Emil Yaremchuk *Myrnam*	Shane Dobson *Two Hills*	4,200
Effectiveness of High Tensile Wire for Holding Corrals • to construct and assess the feasibility of a large set of holding pens, as well as parts of a handling corral, made primarily of high tensile and electric fencing material	Lakeland Forage Association *Lac La Biche*	Harvey Yoder *Lac La Biche*	1,950
Banding versus Broadcasting Fertilizers on Pasture • to demonstrate the options of banding versus broadcasting of nitrogen, phosphorous and potash to a pasture stand, and to demonstrate the rejuvenating effect the knifing operation may have on the pasture stand	Silver Birch Charolais *Bruderheim*	David Wong *Lamont*	2,397
A Comparison of Clearing Methods for Range Improvement in the Central Parklands • to demonstrate range development strategies and to demonstrate the procedures involved in implementing a prescribed burn	C & W Farms *Viking*	Tennis Marx *Ryley*	3,300
Improved Oyster Mushroom Productivity Through Superior Strain and Substrate Selection • to assess the productivity of three strains of oyster mushrooms and to evaluate different substrates	Walter Chipchar *Smoky Lake*	Don Christensen *Smoky Lake*	5,750
Field Pea Variety Testing and Agronomic Study • to demonstrate field pea varieties with different soil and climate conditions	Central Alberta Branch, Pulse Growers Commission *Vermilion*	Neil Miller *Lacombe*	2,985
To Evaluate Different Creep Feeding Systems on Brome Pasture in Northeast Alberta • to evaluate the difference in calf performance and economics of creep feeding protein meal versus grain versus no creep to nursing calves on pasture	Bill Trabysh *Hairy Hill*	Pat Ramsey *Vermilion*	2,352

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
Bacterial Hay Preservative Trial • to demonstrate the use of a bacterial hay preservative	Bill Gibson *Smoky Lake*	Don Christensen *Smoky Lake*	1,870
Perennial Grass Silage and Grazed Regrowth versus Annual Cereal Silage Production • to compare the production and economics of perennial grass silage versus annual cereal silage	Hi-Gain Feedlot *Lloydminster*	Bjorn Berg *Vermilion*	8,514
Field Peas as an Alternative Protein Supplement for Use in Swine Diets • to demonstrate the use of field peas as an alternative protein supplement in swine diets	Ed Bettac *Hilliard*	Ron Bazylo *Vermilion*	3,594
REGION V - NORTHWEST ALBERTA			
Demonstrating Rotational Grazing Using Optimum Levels of Management • to demonstrate a rotational grazing system which includes the use of fertilizers, supplementary irrigation and cross-fencing	Gordon Bredo *Barrhead*	Alan Macaulay *Barrhead*	2,862
Copper Fertility Trial Evaluation on Peat Soils • to demonstrate the use of copper to correct deficiencies on peat soils, and to evaluate commercial sources of copper presently available to producers	North West Peat Soils Group *Barrhead*	Bill Chapman *Barrhead*	8,350
To Determine the Costs of Pasturing Cow/Calf Pairs in North Central Alberta • to collect information on the costs of pasturing cows and calves under various management regimes	Pembina Forage Association *Westlock*	Rod Carlyon *Westlock*	14,895
Introducing Different Forage Species Into Established Pasture • to compare the effectiveness of introducing different forage species into an established pasture by harrowing with chain harrows or through the trampling effect of cattle at high intensity per acre	Pembina Forage Association *Westlock*	Rod Carlyon *Westlock*	2,537
Field Pea Variety Trial on Organic Soil • to evaluate the yield of ten varieties of field peas grown on organic soils	Schlayer Brothers *Westlock*	Rick Bjorge *Westlock*	2,295
Testing Vaporization Rate of Menthol Crystals Using Experimental Solar Application System • to test the vaporization rate of menthol crystals in May and September under average weather conditions	Honeybear Apiaries Ltd. *Rollyview*	Paul VanWestendorp *Edmonton*	2,275
Monitor Sclerotinia Control Using Ground and Aerial Application at Recommended Rates of Fungicide and Split Application • to test different types of fungicide applications and to monitor levels of sclerotinia	ProGrow Canola Club *Edmonton*	Bill Chapman *Barrhead*	12,563
Increased Returns from Improved Wool Quantity and Quality for Alberta • to cross ewes from six popular breeds to determine wool quality while retaining acceptable growth rate in their lambs	Ailie Beaudry *Glenevis*	Wray Whitmore *Edmonton*	1,555
Barley Variety Evaluation and Soil Temperature Monitoring on Peat Soils • to evaluate the thermal properties of deep plowed and layered peat soils at three depths	North West Peat Soils Group *Barrhead*	Bill Chapman *Barrhead*	6,092
Golden Glow Backflooding Irrigation Project • to demonstrate the benefits of using nuisance snow melt before it is drained, and to increase forage yields by using spring flood irrigation	Marvin Pohl *Millet*	Elmer Bittner *Leduc*	2,810
Queen Rearing Operation • to select and develop stock for: overwintering ability, mite and disease resistance, high honey production ability, and gentle temperament	Mike Meilicke *Thorsby*	Elmer Bittner *Leduc*	4,000

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
Agronomics of Pulse Crops in North Central Alberta • to test new field pea varieties, and to demonstrate weed control and disease control of pulse crops on problem soils	Northern Alberta Branch, Pulse Growers Commission *Morinville*	John Hladky *Morinville*	12,300
Heat Synchronization of Heifers Using MGA • to assess the practicality and ease of feeding MGA (melengesterol acetate)	West Central Forage Association *Evansburg*	Dr. Laura Rutter *Edmonton*	4,363
Elevated Reservoir Cattle Watering System • to show a practical alternative method of watering cattle from a dugout	Pembina Forage Association *Westlock*	Bob Buchanan *Barrhead*	2,678
The Effect of Electrolyte Supplementation on Incoming Calves and its Effect on Resolving Marketing Stress • to examine the effect of electrolyte supplementation on calf performance, morbidity and mortality and to determine the actual cost of marketing stress in feeder calves	North West Cattle Feeders Association *Stony Plain*	Rob Hand *Barrhead*	6,100
Effects of a Multi-Site Watering System for Cattle on Pasture • to demonstrate the practical application of multiple pasture watering sites serviced by shallow buried plastic water pipe	Mike Anderson *Barrhead*	Bob Buchanan *Barrhead*	2,360
Herbage Production, Species Composition and Leaf Age Structure of a Grass Sward Grazed Rotationally or Continuously by Sheep • to determine if there are differences in total herbage production of a mixed grass sward when grazed by sheep either continuously or rotationally	Russell Bardak *Duffield*	Ty Faechner *Stony Plain*	2,639
Field Peas as a Protein Source for Lactating Dairy Cows • to demonstrate the use of field peas as an acceptable protein source for milking dairy cows	Francis Strytveen *Sherwood Park*	David Ward *Fort Saskatchewan*	6,877
REGION VI - PEACE RIVER			
Soil Conservation and Rehabilitation Through Minimum Tillage in a Continuous Cropping System • to demonstrate minimum tillage using a recent seed drill model	Ron Molson *Bonanza*	Garry Coy *Fairview*	10,900
Extended Grazing System with Chaff • to determine the effectiveness and economic feasibility of using chaff to extend the grazing season in the Valleyview area	Valleyview & District Forage Association *Valleyview*	Darryl Wells *Valleyview*	1,747
Hay Management System • to develop a hay management system for the Valleyview area	Valleyview & District Forage Association *Valleyview*	Darryl Wells *Valleyview* Trevor Jones *Fairview*	13,984
Nampa Conservation Tillage Project • to demonstrate and evaluate the benefits of conservation tillage	Cliff Mikula *Nampa*	Dave Spencer *Peace River*	8,400
Rotational Grazing System • to demonstrate increased pasture productivity through rotational grazing and fertilization of suitable grass varieties in grey wooded pastures	Marcel Michaud *High Prairie*	Kim Mader *Falher*	1,370
Zero & Minimum Tillage in Continuous Cropping • to compare conventional and conservation tillage systems for continuous cropping	Smoky Applied Research and Demonstration Association *Falher*	Kim Mader *Falher*	4,100
Maximizing of Pasture Use by Increased Production and Extension of Grazing Season • to assess various grass species for early spring and late fall grazing	Norman Hollingworth *Sexsmith*	Mike Rudakewich *Fairview*	5,058

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
An Evaluation of "Hay Mate" Under Four Field Management Conditions • to assess "Hay Mate" applied to a consistent forage stand	Andy Ross *Valleyview*	Darryl Wells *Valleyview*	1,857
Establishment of an Ovine Progressive Pneumonia Free Sheep Flock by Using Cross-fostering and Practical Isolation • to assess the effect of cross-fostering and isolation on O.P.P. (ovine progressive pneumonia) in a sheep flock	Ken and Morag Othen *Blueberry Mountain*	Trevor Jones *Fairview*	10,868
Effect of Seeding Date on Winter Survival and Yield of Glacier Winter Canola • to determine the effect of different seeding rates on winter survival and yield of "Glacier" winter canola	John Iftody *Hotchkiss*	Freeman Ewasiuk *Manning*	1,705
Natural Air Conditioning for Overwintering Honey Bees • to demonstrate the use of natural air conditioning to keep air temperature and quality constant during the critical period of overwintering	Jules Enterprises Ltd. *Watino*	Michael Pearson *Eaglesham*	3,100
Vacuum Packing Silage • demonstrate the feasibility of removing air from a silage pack with a vacuum pump	Valleyview and District Forage Association *Valleyview*	Darryl Wells *Valleyview*	3,510
First Year Establishment Pruning of Smoky Saskatoons • to determine a guideline for pruning saskatoon suckers	Northern Alberta Fruit Testers Association *Hythe*	Bill Smith *Grande Prairie*	290
The Use of Taste Deterrents to Control Browsing of Saskatoon Wood • to determine if various taste deterrents can be used to discourage browsing of saskatoon by deer and elk	Northern Alberta Fruit Testers Association *Hythe*	Bill Smith *Grande Prairie*	200
Plant Spacing Trial • to determine the ideal in-row plant spacing for saskatoons	Northern Alberta Fruit Testers Association *Hythe*	Bill Smith *Grande Prairie*	300
Sawdust as a Mulch for Weed Control in Saskatoons • to evaluate the costs of using sawdust as a mulch rather than manual weeding with no mulch	Northern Alberta Fruit Testers Association *Hythe*	Bill Smith *Grande Prairie*	1,585
Using Liming to Improve Dugout Water Quality • to demonstrate alternate methods of algae control in farm dugouts	Harry Krawchuk *Nampa*	Dave Spencer *Peace River*	2,921
Forage for Extending the Grazing Season • to demonstrate the use of specialized forages to provide nutritious high quality forage specifically during the early spring and late fall	Ed Connolley *Berwyn*	Dave Spencer *Peace River*	2,700
Crop and Soil Monitoring at Subsoiled Sites in the Municipal District of Smoky Lake (#130) • to assess the efficacy of subsoiling with and without amendments	Smoky Applied Research and Demonstration Association *Falher*	Garry Coy *Fairview*	6,350
Effectiveness of Combining Legume Plowdown with Fall Applied Treatments for Thistle Control • to demonstrate the effectiveness of legume plowdown followed by fall applied chemical treatments for perennial weed control	Ray LaFlamme *Falher*	Mike Rudakewich *Fairview*	2,250
Effectiveness of Combining Legume Plowdown with Fall Applied Treatments for Thistle Control • to demonstrate the effectiveness of legume plowdown followed by fall applied chemical treatments for perennial weed control	Dwight Wells *Spirit River*	Mike Rudakewich *Fairview*	2,018
Peace Country Sod Seeding Legumes Demonstration • to demonstrate sod seeding of legumes	Valleyview and District Forage Association *Valleyview*	Darryl Wells *Valleyview*	3,791

Project Title and Objective	Principal Co-operator/ *Project Location*	Project Co-ordinator/ *Office*	Funding Awarded 1989-90
Influence of Water, Fertility, Shelter and Time of Planting on the Establishment of Saskatoons • to demonstrate the influence of water, fertility, shelter and time of planting on saskatoons	Northern Alberta Fruit Testers Association *Hythe*	Bill Smith *Grande Prairie*	3,920
Quack Grass Eradication • to compare two systems of chemical and cultural control of quackgrass	Terry Gerrard *Fairview*	Mike Rudakewich *Fairview*	1,568
Rotary Hoe and Press Drill Ribbed Wheel Demonstration • to demonstrate the use of a rotary hoe for breaking crusts, wheel drill and a drill with conventional press wheels	Smoky Applied Research and Demonstration Association *Falher*	Kim Mader *Falher*	3,500
Windpowered Dugout Aeration • to evaluate the capacity and durability of a windpowered system to aerate farm dugouts	Hugh Dechant *North Star*	Freeman Ewasiuk *Manning*	795
Economics of High Rates of Nitrogen on Pastureland; Applied in Single or Split Application • to assess the economic feasibility of single or split applications of high rates of nitrogen on pastureland	John Connelly *Elmworth*	Bill Smith *Grande Prairie*	1,310
Effect of Lime, Copper and Potassium Fertilizer on Peat Soil Productivity • to evaluate the effect of lime, potassium and copper additions to an acid peat soil deficient in potassium and copper (as well as nitrogen and phosphorous)	Jules Kamieniecki *Manning*	Freeman Ewasiuk *Manning*	1,875
Shelter Designs for Leafcutting Bees in the Peace River Region • to test several shelter designs for leafcutting bees	Alberta Alfalfa Seed Producers Association *Peace River*	Dave Spencer *Peace River*	8,125
Using Small Nuclei Hives to Re-Establish Honeybee Colonies • to assess the feasibility of overwintering small nuclei hives for honeybee colony rejuvenation and disease protection	Denis McKenna *Fairview*	Jim Proctor *Fairview*	5,887
Anik Alfalfa Bloat Trial • to demonstrate the non bloat characteristics of Anik alfalfa	North Peace Forage Association *Fairview*	Trevor Jones *Fairview*	840
Comparative Study of Red Angus and Gelbvieh Sires' Offspring Using Alberta Agriculture's Cattle Improvement Program • to demonstrate the Cattle Improvement Program (CIP) cow/calf management package as a tool to shorten the calving period and to maximize beef herd profits	Bar GR Cattle *High Prairie*	Trevor Jones *Fairview*	1,685

Summary Schedule of Research Awards, by Institution

For the Year Ended March 31, 1990

	1989-90	1988-89
Educational Institutions:		
The University of Alberta	$1,413,000	$1,516,000
The University of British Columbia	–	20,000
The University of Calgary	24,000	24,000
The University of Lethbridge	15,000	10,000
Western College of Veterinary Medicine	164,000	176,000
	1,616,000	1,746,000
Governments:		
Agriculture Canada:		
Beaverlodge	$ 288,000	$ 379,000
Lacombe	290,000	229,000
Lethbridge	820,000	560,000
Saskatoon	80,000	80,000
Vancouver	85,000	42,000
	1,563,000	1,290,000
Alberta Agriculture	416,000	325,000
Alberta Environment	76,000	79,000
	2,055,000	1,694,000
Other:		
Agritrends Economic Research Inc.	$ 40,000	$ –
Alberta Alfalfa Seed Producers Ltd.	–	50,000
Alberta Research Council	9,000	101,000
Associated Engineering Alberta Ltd.	–	35,000
Baker Electronic Enterprises Inc.	–	47,000
Canola Council of Canada	15,000	–
CH2M Hill Engineering Ltd.	–	44,000
Feedlot Health Management Services.	–	30,000
Griffiths & Griffiths Ecological Consultants	35,000	–
Lakeside Feeders Ltd.	36,000	–
MPE Engineering Ltd.	28,000	71,000
Norwest Soil Research Ltd.	67,000	40,000
Veterinary Infectious Disease Organization	38,000	–
	268,000	418,000
	$3,939,000	$3,858,000

Statistical Tables

Distribution of Research Program Projects and Estimated Funding by Institution — **1989-90**

Institution	Number of New Projects	Number of Renewed Projects	Funding Awarded	Percent of Total Awarded
Agriculture Canada	12	20	$1,563,000	39.7
Alberta Agriculture	4	6	416,000	10.6
Alberta Environment	1	1	76,000	1.9
Alberta Research Council	1	–	9,000	.2
Private Industry	5	2	221,000	5.6
University of Alberta	11	31	1,413,000	35.9
University of Calgary	–	1	24,000	.6
University of Lethbridge	–	1	15,000	.4
University of Saskatchewan	1	3	164,000	4.2
Veterinary Infectious Disease Organization	1	–	38,000	1.0
TOTAL	36	65	$3,939,000	

Distribution of Research Program Projects and Estimated Funding by Program Area — **1989-90**

Program Area	Number of New Projects	Number of Renewed Projects	Funding Awarded	Percent of Total Awarded
Cereals and Oilseeds	3	6	$ 675,000	17.1
Crop Protection and Entomology	6	8	691,000	17.5
Forages	1	5	212,000	5.4
Irrigation	1	3	109,000	2.8
Land Resources and Engineering	5	9	504,000	12.8
Non-Ruminant Livestock	2	6	271,000	6.9
Processing and Marketing	9	9	493,000	12.5
Ruminant Livestock	6	13	635,000	16.1
Special Crops	3	6	349,000	8.9
TOTAL	36	65	$3,939,000	

Distribution of On-Farm Demonstration Program Projects and Estimated Funding by Region

	1988-89			1989-90		
Region	Number of New Projects	Number of Renewed Projects	Funding Awarded	Number of New Projects	Number of Renewed Projects	Funding Awarded
Region I – Southern Alberta	12	6	$ 98,338	10	4	$113,050
Region II – South Central Alberta	26	11	88,309	7	17	72,073
Region III – North Central Alberta	26	12	103,305	18	12	110,215
Region IV – Northeast Alberta	20	7	111,794	13	12	69,433
Region V – Northwest Alberta	6	11	71,677	17	1	97,551
Region VI – Peace River	12	18	119,752	21	12	118,509
TOTAL	102	65	$593,175	86	58	$580,831

Distribution of Research Program Projects and Estimated Funding by Year

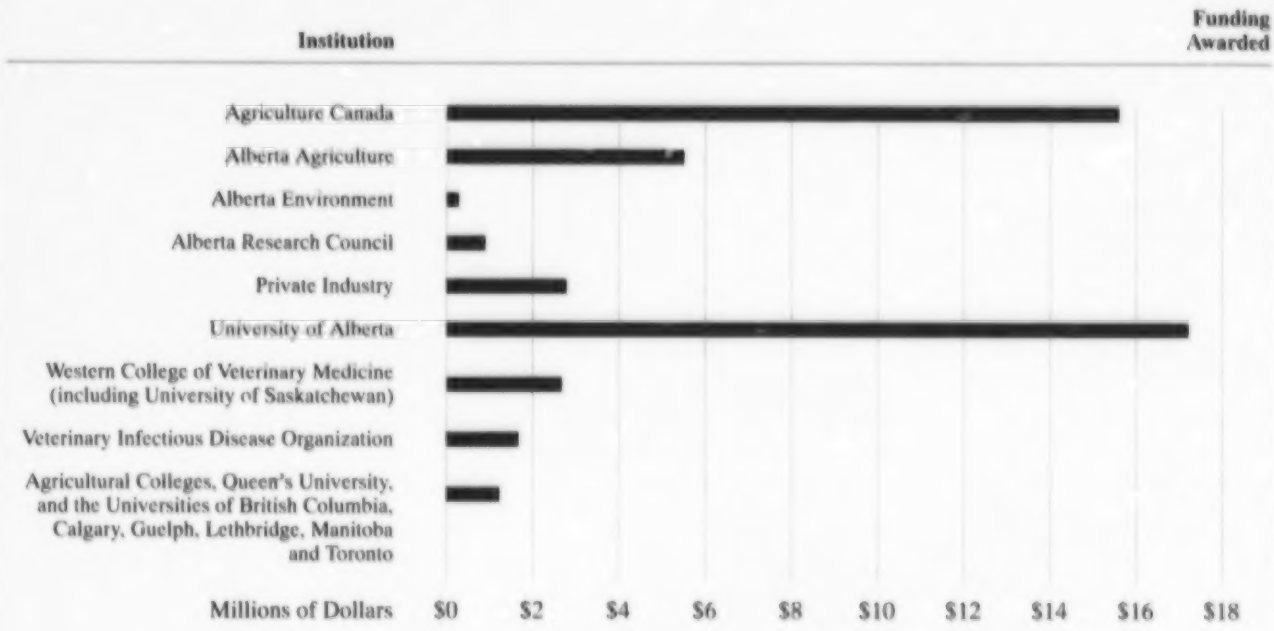
	New Projects		Renewed Projects		Total	
Year	Number	Funding	Number	Funding	Number	Funding
1979-80	54	$2,133,680	–	$ –	54	$ 2,133,680
1980-81	31	980,465	51	2,210,642	82	3,191,107
1981-82	26	796,915	80	3,281,402	106	4,078,317
1982-83	39	2,017,500	101	4,116,911	140	6,134,411
1983-84	48	1,564,675	94	4,977,785	142	6,542,460
1984-85	101	4,343,769	–	–	101	4,343,769
1985-86	38	1,513,079	65	3,309,988	103	4,823,067
1986-87	37	1,533,870	58	3,063,542	95	4,597,412
1987-88	86	3,811,183	–	–	86	3,811,183
1988-89	53	1,744,000	46	2,114,000	99	3,858,000
1989-90	36	1,267,000	65	2,672,000	101	3,939,000
TOTAL	549					$47,452,406

Distribution of On-Farm Demonstration Program Projects and Estimated Funding by Year

	New Projects		Renewed Projects		Total	
Year	Number	Funding	Number	Funding	Number	Funding
1982-83	47	$163,194	–	$ –	47	$ 163,194
1983-84	60	227,846	14	75,336	74	303,182
1984-85	80	226,940	25	93,944	105	320,884
1985-86	92	248,149	29	110,020	121	358,169
1986-87	108	342,044	31	125,102	139	467,146
1987-88	96	383,162	41	158,174	137	541,336
1988-89	114	353,935	54	239,240	168	593,175
1989-90	86	394,724	58	186,107	144	580,831
TOTAL	683					$3,327,917

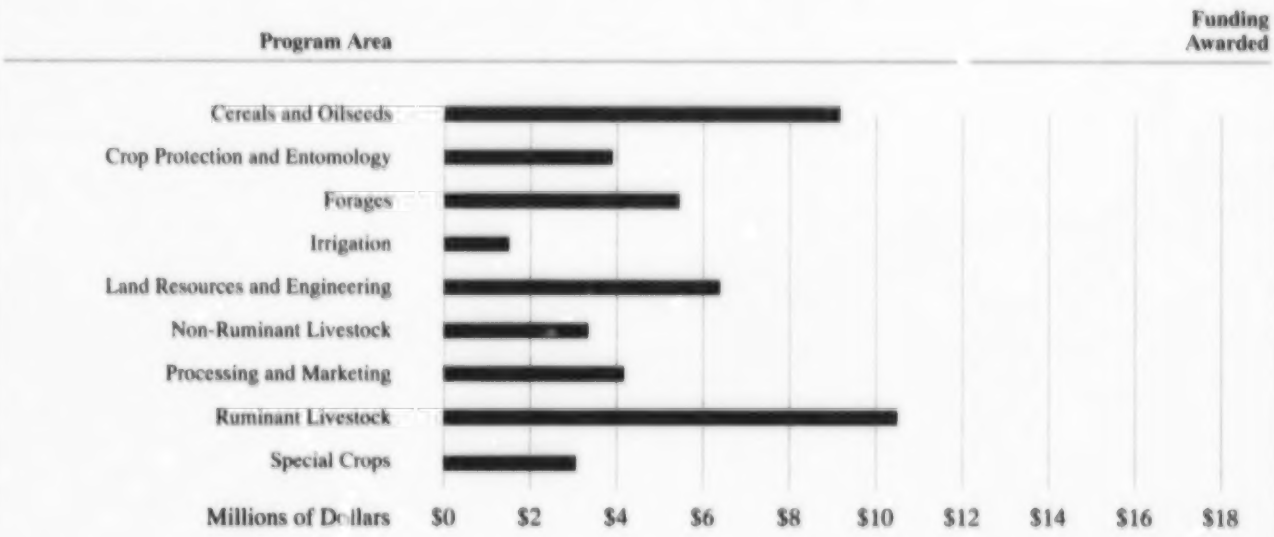
Distribution of Research Program
Estimated Project Funding by Institution

1979-80 to 1989-90



Distribution of Research Program
Estimated Project Funding by Program Area

1979-80 to 1989-90



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Program Committees

Program Area	Cereals and Oilseeds	Crop Protection and Entomology	Forages
Chairman	Mr. Gail Fjordbotten, *Granum* Producer	Vacant	Mr. Murray Holt, *Sangudo* Producer
Vice-Chairman	Mr. Don Macyk, *Edmonton* Alberta Agriculture	Mr. Keith Price, *Edmonton* Alberta Agriculture	Mr. Robert Nelson, *Lacombe* Alberta Agriculture
Members	Mr. Kenneth Appleby, *Tofield* Producer	Mr. Daniel Groenenboom, *Kipp* Producer	Dr. Vern Baron, *Lacombe* Agriculture Canada
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	Mr. Robert Graham, *Olds* Producer	Mr. Ken Nelson, *Stettler* Producer	Dr. Jane King, *Edmonton* University of Alberta
	Mr. Michael Lavoie, *St. Isidore* Producer	Dr. John Spence, *Edmonton* University of Alberta	Mr. Keith Lyseng, *Armena* Producer
	Mr. Lynn Thacker, *Bow Island* Producer	Dr. Dean Struble, *Lethbridge* Agriculture Canada	Mr. Roger Marvin, *Edmonton* Alberta Forestry, Lands and Wildlife
	Dr. Don Woods, *Beaverlodge* Agriculture Canada		Mr. Paul Sorenson, *Berwyn* Producer
			Mr. Norm Ward, *Granum* Producer

Program Area	Irrigation	Land Resources and Engineering	Non-Ruminant Livestock
Chairman	Mr. Leighton Buckwell, *Fort Macleod* Producer and Acting Chairman, Alberta Irrigation Council	Mr. Nestor Romaniuk, *Willingdon* Producer	Mr. John Prentice, *Calmar* Producer
Vice-Chairman	Mr. John Hollinda, *Tilley* Producer	Mr. Brent Paterson, *Lethbridge* Alberta Agriculture	Dr. Terry Church, *Edmonton* Alberta Agriculture
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	Mr. Gary Hartman, *Lethbridge* Alberta Agriculture	Mr. Mike Franchuk, *Smoky Lake* Producer	Dr. Don Hamilton, *Saskatoon* Western College of Veterinary Medicine
	Mr. Simon Jensen, *Standard* Producer	Dr. Henry Janzen, *Lethbridge* Agriculture Canada	Mr. Manfred Kanehl, *Stony Plain* Producer
	Mr. Jake Thiessen, *Edmonton* Alberta Environment	Mr. Ike Lanier, *Lethbridge* Producer	Mr. Peter Klok, *Nobleford* Producer
	Mr. Peter Vanden Dungen, *Vauxhall* Producer	Dr. Stephen Moran, *Edmonton* Alberta Research Council	Mr. Harvey Lehr, *Topland* Producer
	Mr. Paul VanTryp, *Burdett* Producer	Mr. Fred Pewarchuk, *Lamont* Producer	Dr. Allan Sather, *Lacombe* Agriculture Canada
	Mr. Hans Visser, *Taber* Producer	Mr. Bill Woytenko, *Thorhild* Producer	Dr. Jeong Sim, *Edmonton* University of Alberta
	Mr. John Weing, *McGrath* Producer		
	Mr. Richard Williams, *Wardlow* Producer		

Program Area	Processing and Marketing	Ruminant Livestock	Special Crops
Chairman	Mr. Ty Lund, *Rocky Mountain House* Producer and MLA	Mr. Ben Schrader, *Jarvie* Producer	Mr. Jim Hole, *St. Albert* Producer
Vice-Chairman	Mr. Les Lyster, *Edmonton* Alberta Agriculture	Mr. Ron Weisenburger, *Edmonton* Alberta Agriculture	Mr. Thomas Krahn, *Brooks* Alberta Agriculture
Members	Dr. Stewart Campbell, *Lethbridge* Agritrends Research Inc.	Dr. Glenn Coulter, *Lethbridge* Agriculture Canada	Dr. Dermot Lynch, *Lethbridge* Agriculture Canada
	Dr. Brian Freeze, *Lethbridge* Agriculture Canada	Mr. Lorne Cripps, *Westerose* Producer	Dr. Raj Nagarajan, *Edmonton* Alberta Research Council
	Dr. Michael Stiles, *Edmonton* University of Alberta	Mr. John DeLeeuw, *Carrot Creek* Producer	Mr. Gerald Perry, *Cranford* Producer
	Mr. John Stokalko, *Sherwood Park* Private Sector	Dr. Cecil Doige, *Saskatoon* Western College of Veterinary Medicine	Mr. Robert Sproule, *Sherwood Park* Salisbury Greenhouses
	Dr. Terrence Veeman, *Edmonton* University of Alberta	Mr. Francis Gardner, *Nanton* Producer	Dr. J.P. Tewari, *Edmonton* University of Alberta
		Dr. John Kennelly, *Edmonton* University of Alberta	Mr. Jerry Thacker, *Burdett* Producer
		Mr. Murray Stauffer, *Eckville* Producer	

Regional Review Committees

Region	I. Southern
Chairman	Mr. Don Young, *Lethbridge*
Members	*Producers* Mr. Peter Biemans, *Seven Persons* Mr. Ralph Cervo, *Lundbreck* Mr. Steve Slemko, *Coaldale* Mr. Frank Spanbauer, *Barnwell*
	Alberta Agriculture Staff Mr. Gordon Frank, *Brooks* Mr. E. Alan George, *Lethbridge* Mr. Blair Shaw, *Lethbridge*

Region	II. South Central
Chairman	Mr. Glen Werner, *Airdrie*
Members	*Producers* Mr. Del Bates, *Acme* Mr. Lindsay Eklund, *Cochrane* Mr. Arthur Jaques, *Oyen* Mr. William Noy, *Rosebud*
	Alberta Agriculture Staff Mr. Ted Darling, *Airdrie* Mr. Donald Milligan, *Airdrie* Mr. Richard Smith, *Airdrie* Mr. Larry Welsh, *Airdrie*

Region	III. North Central
Chairman	Mr. Alan Hall, *Red Deer*
Members	*Producers* Ms. Joyce Bussard, *Wetaskiwin* Mr. Terry Crisp, *Monitor* Mrs. Ulla DeBruijn, *Ponoka* Mr. Ken Nelson, *Stettler*
	Alberta Agriculture Staff Mr. Wayne Jackson, *Red Deer*

Region	IV. Northeast
Chairman	Mr. Ralph Berkan, *Vermilion*
Members	*Producers* Mr. Steve Blashko, *Andrew* Mr. Clement Fontaine, *St. Paul* Mr. William Hamblin, *Vermilion* Mr. Robert Schacher, *Tofield* Mr. Wyatt Swanson, *Provost*
	Alberta Agriculture Staff Mr. Shane Dobson, *Two Hills* Mr. Rick Klippenstein, *Wainwright* Mr. Ellis Treffry, *Vermilion* Ms. Edith Zawadiuk, *Two Hills*

Region	V. Northwest
Chairman	Mr. John Tackaberry, *Barrhead*
Members	*Producers* Mr. Dale Grieg, *Barrhead* Mr. J.W. Lawton, *Niton Junction* Mr. Robert Stannard, *Sherwood Park* Mr. Clarence Volkman, *New Sarepta* Mr. Garry Webber, *Stony Plain* Mr. Fred Witney, *Boyle*
	Alberta Agriculture Staff Mr. William Chapman, *Barrhead* Mr. Robert Winchell, *Barrhead* Mr. Wayne Winchell, *Barrhead*

Region	VI. Peace River
Chairman	Mr. John Knapp, *Fairview*
Members	*Producers* Mr. Alan Barnes, *Enilda* Mr. Gene Dextrase, *High Level* Mr. Dave Hegland, *Wembley* Mr. Grant Hicks, *McLennan* Mr. John Simpson, *Fort Vermilion* Ms. Gertie Sorenson, *Bezanson* Mr. Tony Yelenik, *Valleyview*
	Alberta Agriculture Staff Ms. Linda Hauk, *Spirit River* Mr. Mike Pearson, *Eaglesham* Mr. Mike Rudakewich, *Fairview*